COLTRACO
Ultrasonics | since 1987

PORTASCANNER® AIRTIGHT

Ultrasonic Airtightness, Leak Detection and Quantification Equipment

Made in the UK.

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COLTRACO.COM/COLTRACO-PRODUCTS/PORTASCANNER-AIRTIGHT/

INTRODUCING THE PORTASCANNER® AIRTIGHT

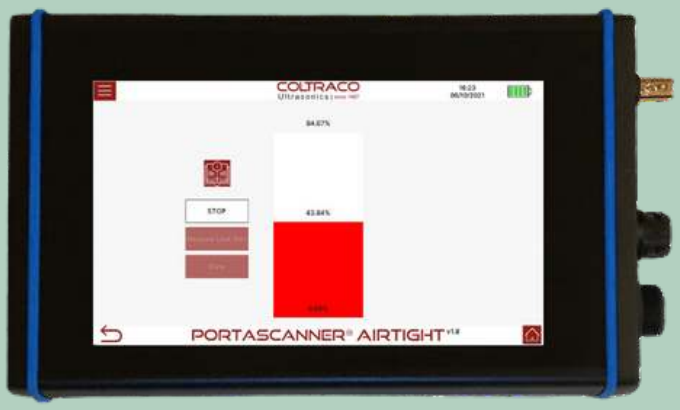
Coltraco Ultrasonics' **Portascanner® AIRTIGHT** is the only instrument that gives you confidence to find, fix and seal air leaks with pinpoint accuracy, providing true insights and certainty for building airtightness, simply and quickly.

Contributing to optimal airtightness: **Portascanner® AIRTIGHT** locates and quantifies even the smallest of leaks and can automatically analyse and consolidate this data, to present these results as indications of a room's airtightness. This allows for quick testing with extreme precision for applications in the construction, maintenance, or medical fields. Based on trusted ultrasonic technology used for 30+ years, **onboard 10,000 ships, approximately 17% of the world's shipping fleet.**

P/N: 509004-AT

KD983 CAGE code – COLTRACO LIMITED

Type: Ultrasonic Airtightness, Leak Detection and Quantification Equipment



MEMBER OF INNOVATE UK'S NET ZERO HEAT COHORT

Portascanner® AIRTIGHT has been developed in part with research and development funding from Innovate UK. Coltraco Ultrasonics is a proud member of Innovate UK's Net Zero Heat Cohort, working to provide technology to support the United Kingdom's transition to Net Zero. We proudly offer **Portascanner® AIRTIGHT** to the global market as a shining example of British innovation and invention to support sustainability.

UKRI Innovate UK

APPLICATION

FOR CONSTRUCTION INDUSTRY

- **No pressurisation** air movement, or temperature differentials needed to detect leaks
- Air leak tests can be conducted **before, during, and after** the Build Programme.
- Undertake a Passivhaus, or equivalent, project, with **the certainty of passing** the mandatory Door Fan Test.
- Any competent person can be **trained in minutes**.
- Camera and reporting on the device for **easy tracking of leaks** in buildings of any size and complexity
- Precision made components and modular solutions can be **factory tested**.

FOR AIRTIGHTNESS TESTERS

- Can be used before, during, and after a Door Fan or Pulse Test.
- **Ease of use**. Lightweight, ergonomic, handheld, battery powered.
- Objective **timestamped** instant reports of leakage.
- **No need to interrupt** the execution of the Build Programme.
- **No need to chase leaks** with a smoke pencil.
- **More precise** than a thermal camera and does not require temperature differentials
- **Instantly detect and locate** air leaks as small as **0.06mm**.

FOR MEDICAL FACILITIES

- Occupants, visitors, and staff may **remain on the wards** whilst testing is conducted.
- Verify that **positive and negative air pressure ventilation** techniques are working efficiently and effectively.
- Test cleanrooms and biological safety cabinets to prevent unwanted infiltration of volatile organic compounds and chemical gases
- **Reduce airborne infection contamination.**
- **Reduce unwanted noise and pest infestation**.
- **Increase fire safety** with improved compartmentation.
- Improve **energy efficiency.**

COLTRACO'S PORTASCANNER AIRTIGHT

Unlike Thermal Cameras, Anemometers, and Smoke Pencils, the **Portascanner® AIRTIGHT** gives certainty. The **Portascanner® AIRTIGHT** is the only equipment that is preventative in its operation, allowing the detection of leaks in the very early stages and ensuring that the door fan test is passed on the first try.

- Use the **Portascanner® AIRTIGHT** to find leaks and seal them during construction, to **pass the Door Fan Test on first try**
- Avoid waiting for a failure on the Blower Door, dismantling the build to try to find leaks, rebuilding and having to test again

CUT COSTS

CUT CARBON

IMPROVE HUMAN HEALTH

PROVIDING REAL WORLD RESULTS

"Thought I'd share this exciting news with you. **We've been using your wand for a project we are building in Sullivan County New York. It's been working great**; we are using it on every module and it helps us fine tune the air sealing.

We have some advanced air sealing details that were developed between SBS and the Architect and an energy consultant.

Even though the project is not going for any certification for energy programs, **we had a module, blower tested.**

The results came back 67% better than Code."

New York, June 2024
Michael Kirby
Signature Building Systems of Pa, LLC
Director of Engineering and Commercial Operations

CHALLENGES WITH CURRENT LEAKAGE DETECTION METHODS

SMOKE PENCILS

- **Require pressurisation**
  1. A blower door, or fan apparatus must be used in addition
  2. The building envelope must be completed, **prohibiting the detection of leaks during early stages of construction**
- Can be **difficult to interpret**, with **smaller leaks easily missed** and local air disturbances leading to **false positives**
- Cannot give a quantitative, or even qualitativ, indication of the **severity/size of the leak**

ANEMOMETERS

- Require pressurisation:
  1. A blower door, or fan apparatus must be used in addition
  2. The building envelope must be completed, **prohibiting the detection of leaks during early stages of construction** unless a localised, sealed fan compartment is used, however, these are time-consuming to set up and **impractical to use** for locating multiple leaks

- Can tell you the flow speed of air, but in order to obtain the volumetric flowrate, which is required to ascertain air permeability or air changes per hour, **a flow hood is required**. Volumetric flowrate anemometers must be **carefully positioned** and, while good at quantifying air leakage, are impractical for use when **the location of the leak is not known**.
- Even flowspeed anemometers, while possible to use for detecting airflow, **cannot scan an area as rapidly and simply** as the **Portascanner® AIRTIGHT** as moving the instrument can **cause false positives**

THERMAL CAMERAS

- A **temperature difference is required** which:
  1. In many cases **necessitates the completion of the envelope** and so this type of testing is often impossible during early build stages
  2. **Limits the time of year** that the test can take place
  3. Can **cause failure due to the unpredictability of the weather**, therefore, leading to **unnecessary delays** in the project
- Thermal imagery is qualitative and, as temperature differences are relative, they **cannot indicate the extent of leakage absolutely**. Thus, different images taken at different times or in different locations **cannot be directly compared**.
- The outputs of thermal testing are **not definitive**. Indications of hotspots can be a result of thermal bridging, rather than air leakage and so there is **uncertainty** associated with interpreting the results.
- Thermal cameras can struggle to pick up smaller leaks or to pinpoint the exact location of leaks irrespective of size'
- High quality thermal cameras can be **prohibitively expensive**, with cheaper models available but **lacking in resolution and reliability**

OUR MOTIVATION FOR PORTASCANNER® AIRTIGHT

The **Portascanner® AIRTIGHT** evolved from the **Portascanner® COVID-19** which was **the first micro air leak detector** developed by Coltraco Ultrasonics for the NHS.

Take a look at the history of the Portascanner® AIRTIGHT:

Originated in our **Portascanner® WATERTIGHT PLUS** range, used for watertight integrity testing at sea, in service for **over 30 years**.

Today's Portascanner® AIRTIGHT!

Portascanner® COVID-19

Designed to prevent infection contagion of an airborne virus, by using **negative and positive air pressure ventilation techniques**.

The **Portascanner® AIRTIGHT** was designed to test airtightness in buildings to **cut costs**, **cut carbon**, and to **improve human health** with our cutting-edge technology.

British Standard 40102 (Part One) is the first standard of its type in the world, unveiled at the recent COP28 Climate Conference in Dubai. This standard provides recommendations for measuring, monitoring, and reporting IEQ in all types of non-domestic buildings.

Having successfully introduced our technology onto **10,000 ships to save lives at sea**, we have a clear understanding, and the technology required, to support the saving of lives within the built environment, and to **improve the lives of billions by enhancing IEQ, of which a vital element is IAQ.**

One of our 2 core principles at Coltraco Ultrasonics is the **Safesite™ Principle**. The **Portascanner® AIRTIGHT** plays a role in using truthful science, in improving Indoor Air Quality, a consequence of **Net Zero Heat**, and that is why we are developing these technologies.

In the final analysis airtightness is much more than a technical requisite. It is a testament to our collective responsibility. It is about crafting buildings that do not just stand as monuments to our creativity, but as symbols of our **commitment to a sustainable future**.

As we stand on the precipice of architectural evolution, addressing air tightness is not just a choice, it is an imperative for generations to come, and that is why we continue to devote our resources at Coltraco Ultrasonics, to develop cutting edge technologies which enable competent persons to find, fix and seal air leaks in buildings.

CASE STUDIES

Four case studies showcasing the success and versatility of the **Portascanner® AIRTIGHT**. If you want to see more, please visit our website or ask a member of our team.

LEEDS BECKETT AND COLTRACO COLLABORATE TO DEVELOP A NOVEL LOW-COST BUILDING AIRTIGHTNESS TESTING TOOL (2023)

Dr David Johnston, Professor of Building Performance Evaluation in the Leeds Sustainability Institute at Leeds Beckett University, said: "*The airtightness performance of building fabric can have a significant impact on energy use and CO2 emissions. Therefore, it is important to develop low-cost tools that are capable of rapidly assessing and quantifying the airtightness performance of a building, providing an alternative to existing methods of testing airtightness. All of these tools will be important in helping the UK meet its Net Zero obligationsLeeds Beckett University and Coltraco Ultrasonics have joined forces to create the* ***Portascanner® Airtight****, a handheld device using ultrasound to quickly measure air leakage in buildings."* Supported by UK Government funding, this tool marks a major step forward in airtightness testing. By merging academic knowledge with advanced tech, the **Portascanner® Airtight** aims to improve the precision, speed, and eco-friendliness of building assessments.

CASE STUDY – Cleanroom in a UK Laboratory (2023)

Coltraco Ultrasonics tested the **Portascanner® AIRTIGHT** at a UK laboratory's cleanroom, focusing on critical entry points. The device identified substantial leaks around the inner-entrance door and equipment room door, with minor leaks in the equipment hatch and wall panel. The cleanroom manager praised the **Portascanner® AIRTIGHT** for its accuracy, minimal disruption, and valuable leak detection data, highlighting its importance for maintaining airtight cleanroom environments.

Case Study – Portascanner® AIRTIGHT Tested at World's Second Tallest Building (2023)

The **Portascanner® AIRTIGHT** was demonstrated at the world's second tallest building, standing at 632 meters. This groundbreaking device, efficiently identifies and quantifies air leaks with microscopic precision. It also calculates air flow rates and overall air permeability, aiding in achieving Passive House levels of airtightness. The non-invasive nature of the **Portascanner® AIRTIGHT** ensures testing can occur without disrupting occupants, making it an essential tool for maintaining high standards in building ventilation and sustainability.

CASE STUDY: Successful Field Trials of the Portascanner® AIRTIGHT 520 at the Air Tightness Testing & Measurement Association (ATTMA)

The **Portascanner® AIRTIGHT** was successfully tested at ATTMA's Building Performance Hub, identifying and quantifying air leaks in a full-sized house more effectively than traditional methods. The trials, which included Door Fan and Pulse Testing, demonstrated the device's ability to locate and measure leaks, allowing for precise, immediate remediation. This ensures buildings have a better chance of passing airtightness tests by detecting leaks early in the construction process.

WHATS IN THE BOX?

- Portascanner® AIRTIGHT
- Portascanner® Ultrasound Sensor Wand
- Portascanner® 3-Transducer Ultrasonic Generator
- Portascanner® 1-Transducer Variable Ultrasonic Generator
- 4 x Aluminium Sections and 1 x Sensor Handle
- 5cm Sensor Positioning Guide
- Tripod Stand and Clamp
- Headphones
- Micro-USB Charger
- USB Stick
- USB WiFi Dongle
- USB Splitter
- Operating Manual
- Calibration Certificate
- Robust Carrying Case

BENEFIT FROM WARRANTY AND SUPPORT

- Main Unit: 3 years
- Sensors: 1 year
- Lifetime customer support

OUR PRODUCT RANGE

PRODUCT FEATURES	PORTASCANNER®	PORTASCANNER® AIRTIGHT
Rapidly Identify Leaks And Determine Their Precise Location	✓	✓
Measure And Quantify Leaks	✗	✓
Calculate Air Flow Rates	✗	✓
Calculate Air Permeability	✗	✓
Record And Photograph Leaks	✗	✓
Touch Screen	✗	✓
Standard Ultrasonic Multi-directional Generator	✓	✓
Variable Power Output Generator	✗	✓
Metric And Imperial Leak Sizes And Flow Rates	✗	✓
Store And Export Test Reports	✗	✓

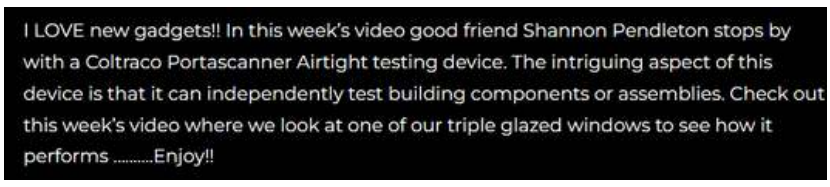
TECHNICAL DATA

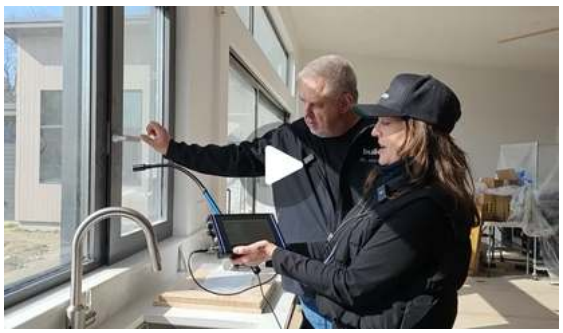
DIMENSIONS	Main Unit: 225mm (L) x 135mm (W) x 35mm (D) Sensor Wand: 230mm (L) x 25mm (Diameter) Extension aluminium sections provided for additional length Generator: 112mm (L) x 67mm (W) x 25mm (D)
WEIGHT	Main Unit: 1051g; Generator: 137g
READINGS	Visual: Displayed on user interface as percentage or in decibels Audible: Ultrasound converted to audible frequencies, played via headphones Measures cross-sectional area of leak sites and predicted flow rates Switch between metric and imperial units for leak sizes and flow rates
ACCURACY	Detect leaks as small as 0.5mm and below Quantify leak areas to within 10%
POWER SUPPLY	Rechargeable LiPo Battery, 6+ of continuous use
DISPLAY	7-inch Capacitive Touchscreen, LCD back-lit Resolution: 1024x600
CAMERA	8-megapixel camera on rear of device
OPERATING TEMPERATURE	-10°C to +65°C / 14F to 149F
OUTPUT	Single 40kHz Transducer Variable power settings, 0-100%
Mounting method	Place on top of suitable surface or mount in tripod provided
WARRANTY	Main Unit: 3 years Sensor Wand: 1 year

DEMONSTRATION VIDEOS

https://www.youtube.com/watch?v=n9a87yneD6A

Demonstration of the **Portascanner® AIRTIGHT** at a Passive House Fire House project in Manhattan, USA. Highlights the importance of airtight construction ensuring that buildings are energy-efficient.





https://buildshownetwork.com/contents/ULTRASONIC-AIRTIGHTNESS-TESTING

OUR THROUGH-LIFE COMMITMENT TO YOU

We look after our customers throughout the lifetime of your equipment.

Every main unit is supplied with **3 years warranty** and **1 year warranty on its sensors and accessories.**

We are proud to offer free lifetime technical support and online training is available on request with a range of solutions designed to meet your calibration requirements:

Onshore Calibration

This can be done in our UK laboratory or in one of our 11 ODA Service Centres present globally
We also support 1-1 exchanges with a pre-calibrated unit to reduce processing time
We also offer a unit collection service for customers who are not used to sending equipment out of their respective countries.

ABOUT COLTRACO ULTRASONICS

Coltraco is ISO 9001:2015 and ISO 14001 approved

Our organisation comprises:

- Our **Company**
- Our **Laboratory**, co-located with the Centre for Advanced Instrumentation at Durham University
- Our **Research Organisations**, the Durham Institute of Research, Development & Invention (DIRDI)
- Our **Centre for Underwater Acoustic Analysis** (CUAA)

"To see the sounds that others cannot hear"

"To measure the hitherto unmeasurable"

Engaged in Research, Design, Development, Manufacture, Integration & Sustainment of high-exporting advanced technology systems, products and services.
We monitor and measure an array of specialised environments to deliver the Safesite™ on land and the Safeship™ at sea.

BY BEING SCIENCE-LED:

We identify and nurture brilliant minds, creating a unique research environment at Durham University, which is a globally outstanding centre of teaching and research excellence.

In our research at DIRDI, we undertake fundamental research into the physical laws of the universe, alongside applied research in Physics, Mathematics, Engineering and Computer Science in acoustics, electromagnetism and information engineering.

It is this research and manufacturing excellence, and our enduring commitment to the sustainment of our technologies in the field, that makes Coltraco Ultrasonics the partner of choice for customers and distributors in 120 countries.

We deliver genuine value for our customers through our scientific and institutional values, and the global quality of our commercial and technical services.

Safeship™
Today our instruments are aboard 17% of the world's 60,000 ships, preventing ships' catastrophic failure, by monitoring watertight integrity on the one hand, and the safe contents of fire extinguishing gases such as CO2, on the other. These are the basic principles by which we became a Safeship™ company in the maritime sector.

Safesite™
Our instruments serve over 20 market sectors, to ensure that safety-critical systems, such as gaseous fire suppression systems, sprinkler systems, process control equipment, and ventilation systems in high-value assets always work effectively. In the Built Environment, we provide the ability to locate and measure airflow so that buildings are energy efficient and healthy for occupants and for our planet.

Contact and support

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British manufacturer of ultrasonic technologies, exporting to 120 countries and twice winners of The Queen's Award 2019 and 2022.