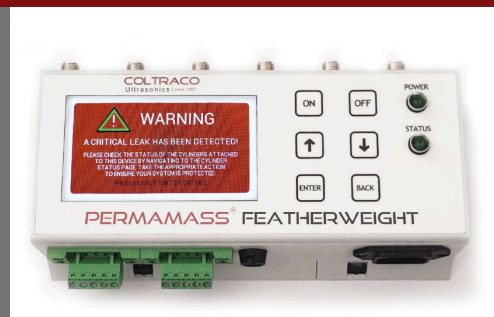


INTRODUCING PERMAMASS® FEATHERWEIGHT

Continuous Agent Loss Monitoring
System for High-Pressure Seamless
Fire Suppression Systems



INTRODUCING THE PERMAMASS® FEATHERWEIGHT

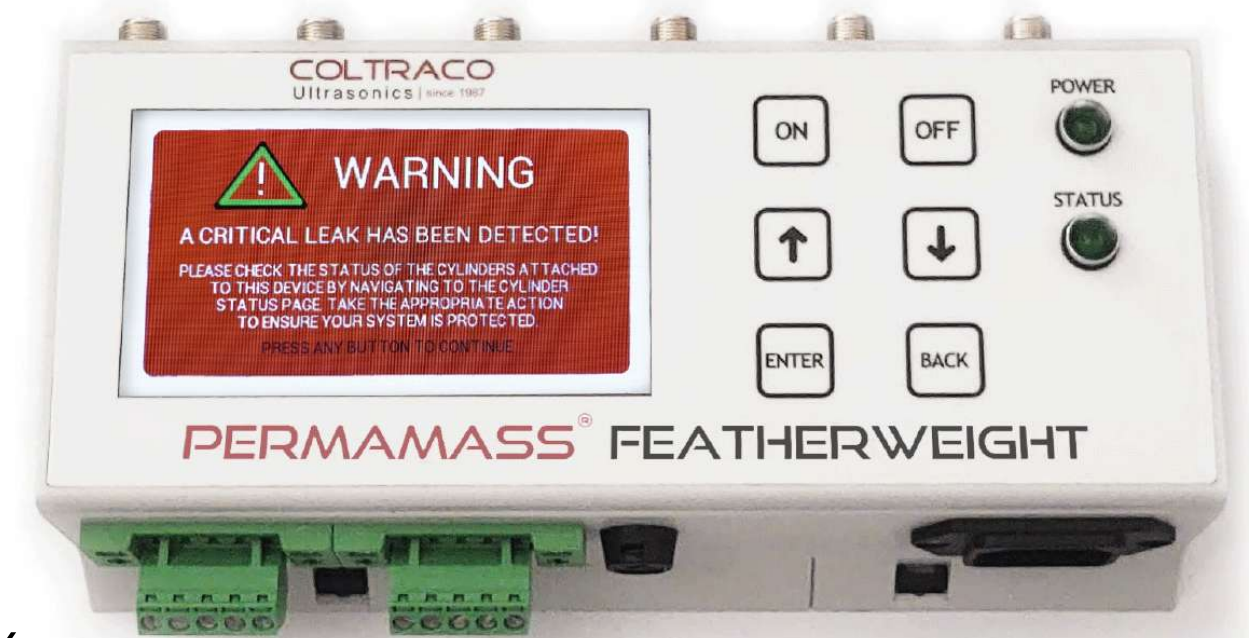


The **PermaMass® Featherweight**: for continuous monitoring of high-pressure fire suppression agents, such as 1. Inergen™ 2. Carbon Dioxide (CO2) and 3. Clean Agent cylinders with combined Nitrogen.

It is the world's first **Three-Gas-System** to continuously monitor a loss of agent quantity in real-time, un-affected by temperature

- **Type** – Continuous Agent Loss Monitoring System
- **Part Number** –2594650-PMLFW
- **Regulation Compliance:** ISO 14520-1 & ISO 6183

Coltraco is the **first in the world to monitor 24/7 loss of mass and pressure** of Inert gas of Inergen blends, as well as mass loss in CO2 and liquefied clean agents such as NOVEC™ 1230, FM200® with Nitrogen to 100g, or better than 1% accuracy above 10 kg total agent weight.



CONTINUOUSLY MONITOR

24/7 monitoring to ensure cylinders are at designed capacity. Real-time information on the exact amount of agent in cylinders.

IMMEDIATE NOTICE

Details of leakage on a full-colour 4.3" display. The system will show the exact amount of agent loss, including percentage loss with 100-gram accuracy.

PRE-PROGRAMMED THRESHOLDS

Based on regulatory needs: 10% for CO2 and 5% for Clean Agents, for Inergen™, will also be given the pressure loss which is intrinsically linked to mass.

ADVANTAGES OF THE PERMAMASS® FEATHERWEIGHT

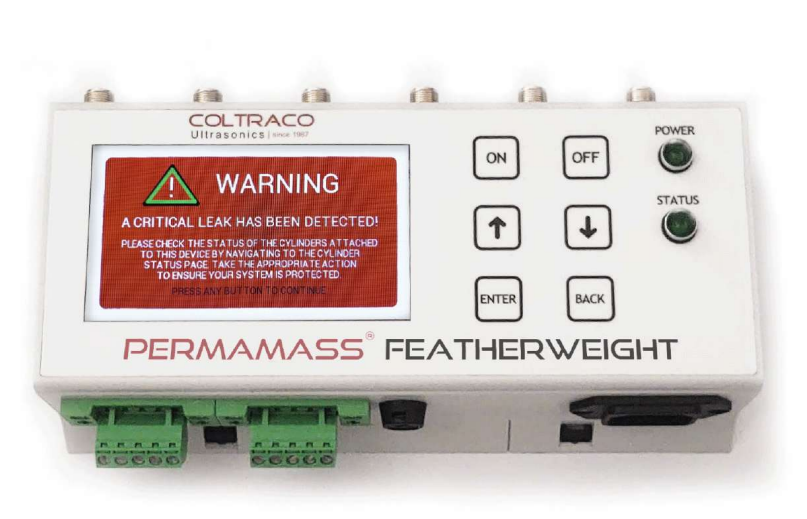
Easy to Retrofit
easily configurable to retrofitting along with full refits of your fire suppression systems

Better Accuracy
within 1% of true agent weight and within 1% for pressure loss in Inergen™ systems above 10kg agent weight

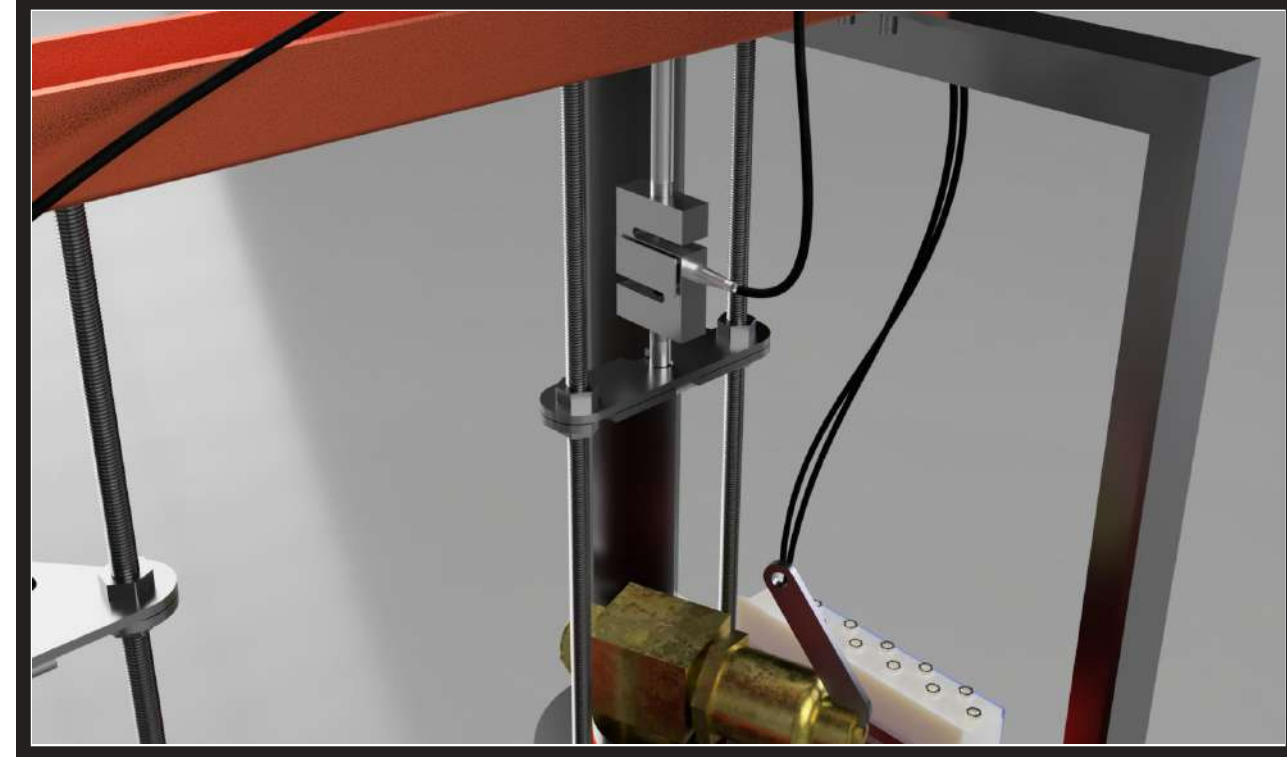
Lighter & Cheaper
much lighter than traditional full-mechanical load weigh systems



Shared Power
power four units from one source – connecting 48 cylinders



Hot Climate
Operates on CO2 at High Temperatures where liquid level detection is not possible



Continuously Monitor
24/7 monitoring of cylinders to ensure they are at designed capacity

Risks
can be identified earlier providing the ability to fully assess the severity of a leak and take remedial action

Ease of Use
Once installed and set-up the system is fully protected without requiring any user input

INSTALL EASILY

- The **PermaMass® FEATHERWEIGHT** “plug and play feature” allows the user to disconnect individual load cells, which is vital to allow maintenance or repair on individual sensors without disruption to the cylinders. The unique software and mechanical design enables this to occur.
- This **24/7 continuous monitoring system** for total flood fire suppression systems provides **real-time “live” information** on the exact amount of agent in the cylinders to less than 1% accuracy above 10kg agent weight or 100g below.
- During a leak event, the system will show the exact amount of agent loss, including percentage loss in each cylinder, and if monitoring Inergen™, it will show pressure loss, which is intrinsically linked to mass, all displayed on a full-colour 4.3” display.

UNIQUE

A unique combination of electronic hardware (highly accurate strain gauge sensors), software design (intuitive interface), and enhanced mechanical capabilities.

In an easy-to-install system, that displays and monitors in real-time highly pressurised liquefied and non-liquefied extinguishing systems in seamless cylinders.

REAL-TIME

CUSTOMISABLE

Unlike competitor load weigh systems you have an unique installation capability with commonly available mechanical parts for customisation enabling different cylinder-spacing between valves and hanging mechanism



INERT GAS SOLUTION



The **PermaMass® FEATHERWEIGHT** is the world's first with a **three-gas capability** meaning one system can effectively monitor high value non-liquefied clean agents, such as Inergen™ blends. Specifically, with Inergen™ blends, any agent loss is indicated as well as the percentage pressure loss which is intrinsically linked to agent mass. It also monitors high-pressure CO2, liquefied clean agents, such as NOVEC™ 1230 and FM-200® with combined Nitrogen, and other complex fire suppression systems.

Non-liquified, pressurised inert gas systems currently rely solely on pressure gauges to determine the condition of their contents. However, pressure monitoring alone requires temperature compensation. Any pressure loss could be either; a result of a temperature change or a loss of agent due to a leak.

The **PermaMass® FEATHERWEIGHT** directly relates a change in pressure of a cylinder at a known temperature to a change in its mass. The well-known 'ideal gas' equation predicts a 1:1 relationship between fractional changes in pressure and mass. There is an intrinsic relationship between the two; however, real gases are more complicated. Changes in pressure and mass depend on specific cylinder contents.

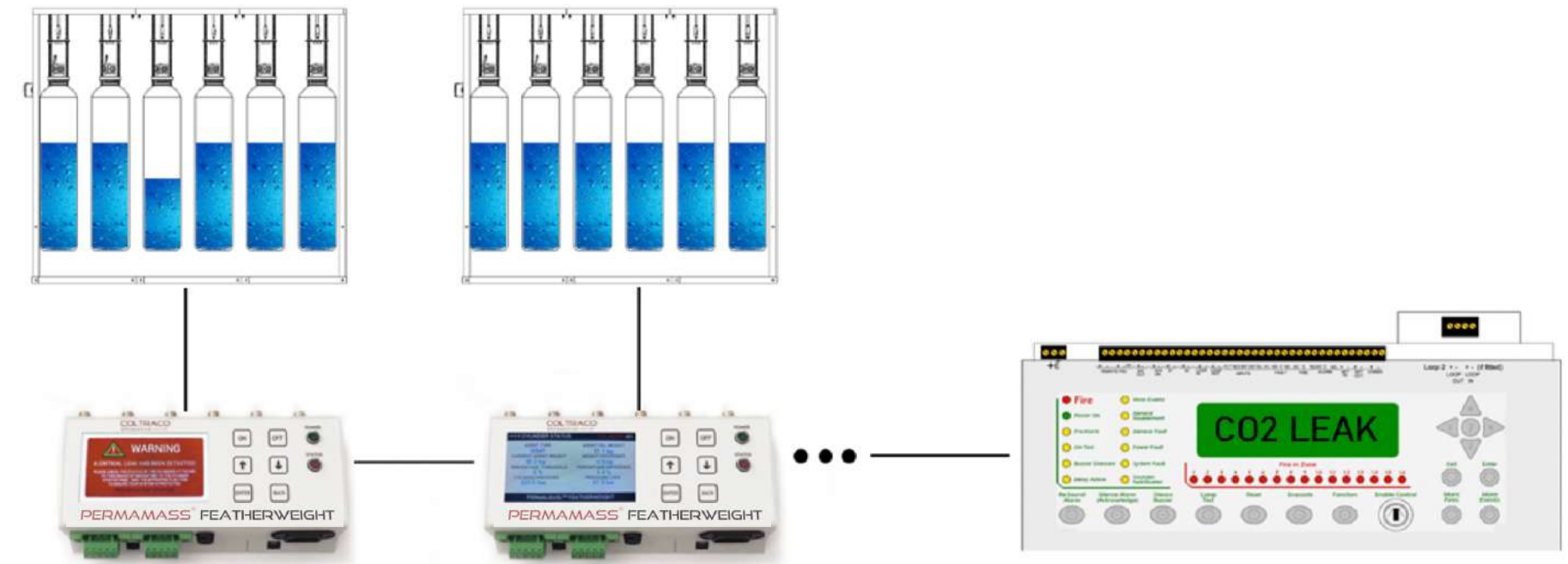
PermaMass® FEATHERWEIGHT accounts for this to accurately and reliably in specific cylinders and inert gas agents, allowing us to accurately and reliably convert a change in mass to a change in pressure - we do this with a level of accuracy not seen beyond a 1A class industrial pressure gauge.



ISO 6183 - CARBON DIOXIDE EXTINGUISHING SYSTEMS

CO2 systems leak and, therefore, need to be monitored and maintained. Given that CO2 systems are designed for the individual need of a room, area or building, a 10% loss of agent may render the system incapable of fully extinguishing a fire.

Under **ISO 6183 CO2 systems**, must be continuously monitored. ISO 6183:2022:



Clause 6.2.4.3 - The content of the containers shall be monitored continuously. Any loss of more than 10% carbon dioxide in any container shall be automatically indicated.

The **PermaMass® FEATHERWEIGHT** goes above and beyond ISO 6183 by:

- Providing real time live contents monitoring, showing the exact amount of agent in the cylinders. It therefore shows loss of agent to less than 1% accuracy above 10kg agent weight or 100g below.
- To comply with **ISO 6183** an alarm threshold is set at 10% loss of content within a container. The system will show you the exact amount of agent loss, including percentage loss in each individual cylinder. This allows quick assessment of the problem enabling quick and effective, and most importantly planned remedial action before a major event occur.
- Operating at high temperatures. CO2 has a critical temperature of 31°C, the point at which the gas behaves as a supercritical fluid. At 31C liquid level testing is not possible as there is no liquid present. The **PermaMass® FEATHERWEIGHT** compensates for temperature, meaning compliance with **ISO 6183** can be assured in every climate.

COMPLY WITH ISO 14520

ISO 14520-1 Gaseous fire-extinguishing systems 9.2.1.3

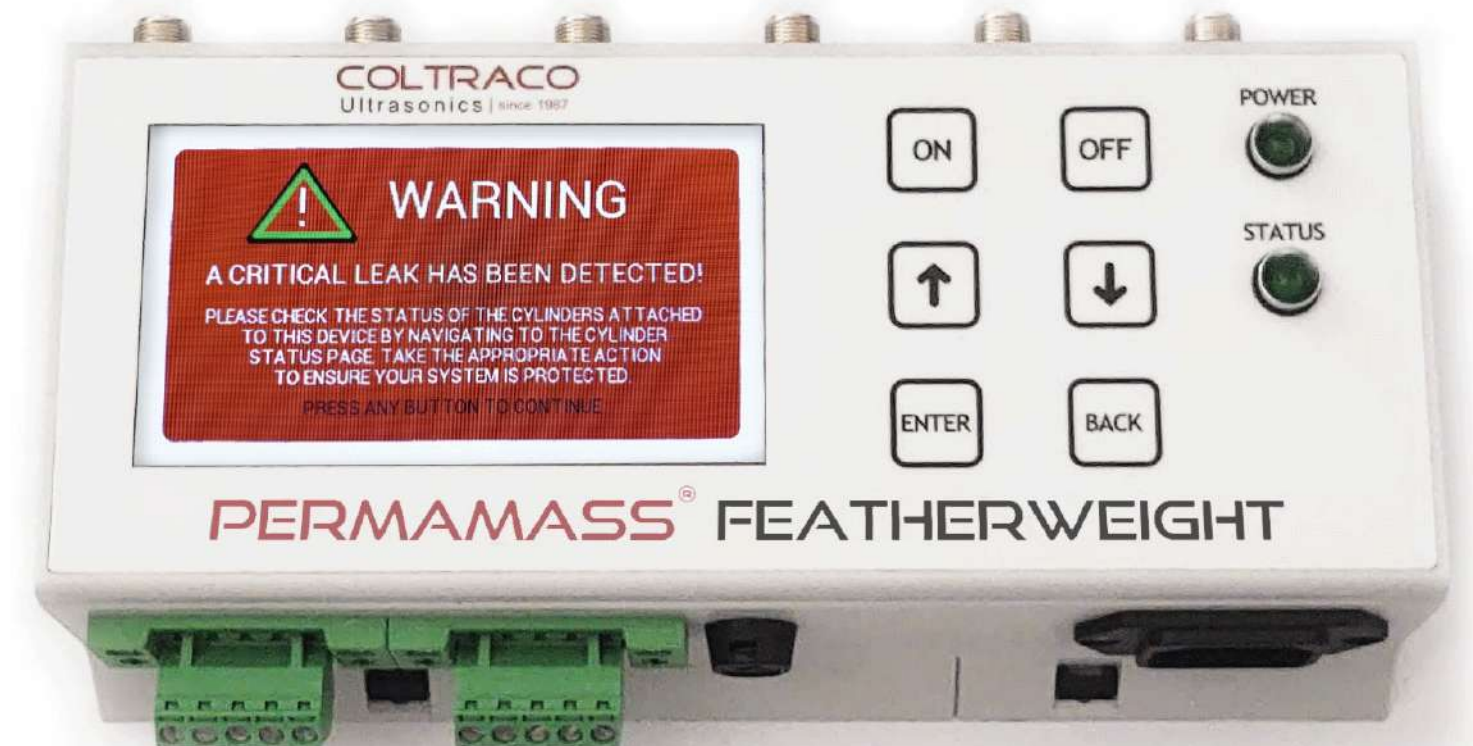
The storage container contents shall be **checked at least every six months** as follows: Non-liquefied gases: for inert gas agents, pressure is an indication of agent quantity. If a container shows a loss of agent quantity or a loss of pressure (adjusted for temperature) of more than 5%, it shall be refilled or replaced.

The **PermaMass® FEATHERWEIGHT** continuous monitoring system ensures that gaseous fire extinguishing systems are always fully operational and that no slow leakage or accidental discharge has occurred, which could reduce the effectiveness of the systems fire protection capabilities in the event of a fire.

Gaseous extinguishing systems protect critical infrastructure against special hazards and are fundamental for the safeguarding of personnel and high-value assets.

Gaseous fire extinguishing systems leak and, therefore, need to be monitored and maintained. Given that gaseous systems are designed specifically to the individual need of a room, area or building, a 10% loss of agent may render the system incapable of fully extinguishing a fire.

Continuously monitoring gaseous systems is essential for protecting occupants in the premises and mitigates financial and reputational loss to critical infrastructure in the event of a catastrophic fire.





ABOUT COLTRACO ULTRASONICS



Led by our **Chairman**, Dr Carl Hunter OBE, founder of Coltraco Ultrasonics.

Headquartered in **London**, we are a British high-exporting advanced manufacturer.

Operating in **120 countries**, with Distributors in **80 countries**.

Our technologies are used across a diverse array of **25 Market Sectors**, from shipping to safety engineering, from process control to mining, from offshore energy to renewables, from healthcare to the built environment, naval and space.

Proud winners of the Queen's Award for Enterprise in International Trade, in both 2019 and 2022.



Our organisation comprises of Manufacturing, Scientific, Research and Technological Development & Solutions:

- Our **Company**: COLTRACO ULTRASONICS
- Our **Laboratory**, co-located with the Centre for Advanced Instrumentation, part of the Department of Physics, 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"



Delivering **Safesite™** on land in areas such as the airtightness of a building, data centre or ICU Hospital Ward and

Safeship™ at sea in the watertight integrity of a ship or offshore platform or the monitoring of the gaseous extinguishing system contents that protect them against fire.

BY BEING SCIENCE-LED:



We identify and nurture brilliant minds, creating a unique research environment at Durham University, 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 our research and manufacturing excellence and our enduring commitment to the "through-life" sustainment of our technologies by aerospace standards of Maintenance, Repair, Overhaul, Calibration & Certification.



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

OUR CUSTOMER CARE COMMITMENT



Global Support

You can receive worldwide support through our network of Global Partners, Distributors, and Service Centres (ODA's).

More than 150 Exclusive local distributors, in over 80 countries.

Service Stations worldwide including:

- Europe - UK, Turkey
- Middle East - UAE
- Asia - India, Singapore, Hong Kong
- Australia
- USA - Florida
- Central America - Trinidad
- South America - Brazil



With every Coltraco purchase you receive FREE Lifetime Technical Support in addition to your 3 year warranty on the main unit and 1 year on the sensor.



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