



T-Guard™

Leak Detection Sensor

**THE SENSITIVITY
OF HELIUM LEAK DETECTION
AT A PRESSURE-DECAY SYSTEM PRICE**

Helium leak detection just got simpler and more affordable.

INFICON T-Guard™ Leak Detection Sensor delivers the sensitivity and speed helium leak detectors are known for, at a cost similar to pressure decay systems. It works with simple chambers at atmospheric pressures, so there is no need for costly and complex high-vacuum chambers and pumps. That makes automated systems based on T-Guard an attractive alternative to pressure decay and water bath leak detection, providing up to 100 times the sensitivity with low cost of ownership and high ease of use. The measurements are also highly repeatable, even with large, warm or humid test objects.

FEATURES AT A GLANCE

- Helium leak detection at the price of pressure decay
- Up to 100 times more sensitive than pressure decay and 1,000 times more sensitive than water bath systems
- Faster than pressure decay
- Works at atmospheric pressure — no need for costly vacuum-tight chamber or high vacuum pump
- Leak tests also on big, warm or humid objects, and those that cannot stand vacuum
- Low cost of ownership due to maintenance-free INFICON Wise Technology™
- Small and lightweight for easy system integration in automated systems
- Flexible control by PLC, PC or optional display unit

THE FIRST HELIUM CHAMBER LEAK DETECTOR THAT DOESN'T NEED VACUUM

T-Guard™ Leak Detection Sensor is based on the maintenance-free INFICON Wise Technology™, proven in more than 1,000 systems. This innovative approach uses a quartz (SiO₂) membrane to separate helium from all other gases at atmospheric pressures. There is no need for expensive vacuum chambers and the costly, maintenance-intensive turbomolecular pumps are eliminated. Also, test parts that don't tolerate vacuum, can be tested.

As a result, manufacturers of leak detection systems can take advantage of T-Guard's lower cost to increase their profits, reduce prices, or expand into markets where helium leak detection has been considered too expensive or too complex.

DETECTS SMALLER LEAKS IN LESS TIME

Pressure decay leak detection is limited to leak rates in the range of 10⁻³ mbar l/s (10⁻⁴ mbar l/s at most) and is suitable for small test objects only. Opposed to this, T-Guard™ measures bigger parts in attractively short times (i.e. leak rates of 10⁻⁴ mbar l/s for 10 l volumes in 30 s or even 10⁻⁵ mbar l/s for 1 l in 30 s). This gives manufacturers of pressure decay leak detection systems another option to offer for customers who need extra sensitivity and/or speed.

Water bath testing has its own shortcomings. Numerous tests have shown that even under ideal conditions, the method detects leaks only down to the 10⁻³ mbar l/s range. In real-life situations where tiny bubbles can stick to fins and other parts of the object being measured, the actual detection limit may increase by more than 2 decades. By comparison, T-Guard™ Leak Detection Sensor reliably detects leaks down to the 10⁻⁶ mbar l/s range.



APPLICATIONS

- Wherever pressure decay and water bath systems are used and are not sensitive enough
- Leak detection for air conditioner components
- Manufacturers of automotive gas lines, small heater coils, etc. that are now demanding better leak tightness
- Leak detection involving warm, humid or large parts, where the pressure decay method is ineffective
- Other markets where helium vacuum leak detection has been considered too costly or complex

LESS COSTLY TO BUY AND OWN

Pricing similar to pressure decay and low cost of ownership make the T-Guard very attractive. Its sensor uses robust, maintenance-free Wise Technology™, which has no wearing parts or failing ion source filaments, so scheduled downtime is minimized. The external hoses are approved and easy to replace, and the entire gas flow system is protected by easily accessible external filters. Software updates are possible via RS232 — no buttons to push. It is warranted for two years or 8,000 operating hours, but typically lasts 15,000 hours. A standby function and other protecting modes help increase its lifespan.

SIMPLE DESIGN MAXIMIZES RELIABILITY

The T-Guard sensor uses fewer components than other helium leak detectors, reducing the risk of a failure. It has only three valves. The necessary gas flow is monitored by the pressure sensor. This elegant approach provides maximum availability and reduces unscheduled downtime. INFICON T-Guard™ Leak Detection Sensor delivers high sensitivity and robust reliability with minimal maintenance — without high-vacuum chambers and pumps — for about the cost of pressure decay systems. So system integrators and producers of less-sensitive leak detection technologies now have a powerful new way to meet their customers needs.

INTELLIGENT SOFTWARE MAKES OPERATION FAST AND EASY

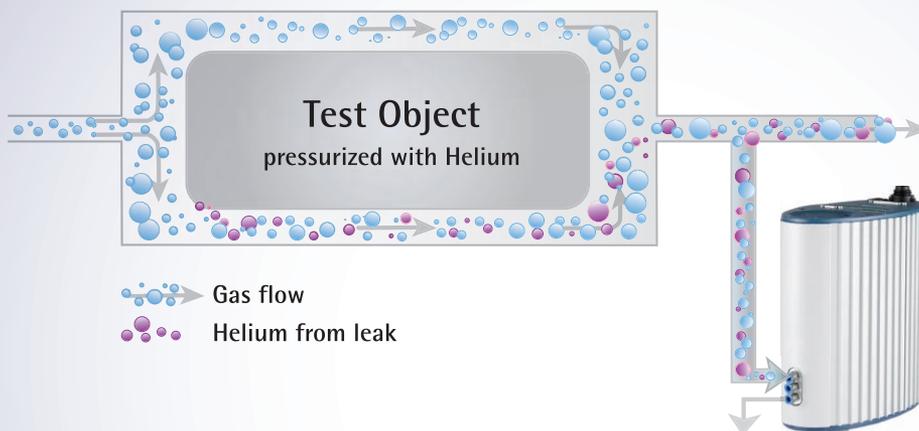
The internal software of the T-Guard™ Leak Detection Sensor provides accurate measurements at high speed in all measurement modes and ranges. This allows fast regeneration and communication of leak rate signals.

To facilitate unit exchange, user set-ups can be stored on the optional I-Stick for easy and fast parameter transfer. T-Guard™ Leak Detection Sensor offers flexible inputs and status outputs for PLC control. Additionally, control and data acquisition is available via the RS232 communication port. The optional display unit supplies easy operation through an intuitive menu structure and aiding software menus.

A CLASS OF ITS OWN

With the revolutionary concept of helium chamber leak detection at atmospheric pressure, T-Guard™ Leak Detection Sensor closes the gap between costly hard vacuum helium leak detection and low sensitivity leak testing methods like water bath and pressure decay.

There is no faster and cost-effective way of repeatable leak testing in the measurement range of T-Guard™ Leak Detection Sensor.



THE CARRIER GAS METHOD PRINCIPLE

In carrier gas mode, a suitably sized stream of air passes the test object. This stream transports the helium from any given leak to T-Guard™ Leak Detection Sensor.

T-Guard™ Leak Detection Sensor measures the helium concentration in the gas stream and reports the actual leak rate to the user.

SPECIFICATIONS

Minimum detectable helium leak rate	1 x 10 ⁻⁶ mbar l/s
Measurement range	5 decades
Test chamber pressure	1 atm
Maximum carrier gas flow	1,000,000 sccm
Probe gas flow FINE / GROSS	180 sccm / 90 sccm
Time constant of the leak rate signal	< 1 s
Helium sensor	Wise Technology™
Run up time	< 3 min
Hose connectors	6 mm
Control inputs	6 x PLC compatible (max. 35 V)
Status / Trigger outputs	8 x relay contacts (max. 25 V AC / 60 V DC / 1 A)
Chart recorder output lin/log	2 x 0-10 V, programmable
Power supply demand / power consumption	24 V DC / 100 W
Type of protection	IP40
Dimensions (L x W x H)	258 x 130 x 272 mm; 10.2" x 5.1" x 10.7"
Weight	4.5 kg / 10 lbs
Noise level dB (A)	< 56
Recommended fore pump	two-stage diaphragm

ORDERING INFORMATION

T-Guard™ Leak Detection Sensor	Cat.-No 540-001
Options, Accessories	
Display unit for table-top use	551-100
Display unit for rack installation	551-101
Connecting cable for display unit, 5 m	551-102
Connecting cable for display unit, 1 m	551-103
Set of connecting plugs	551-110
I-Stick	200 001 997



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Due to our continuing program of product improvements, specifications are subject to change without notice.

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