BES4000 Electrolyte Sniffer Leak Detector

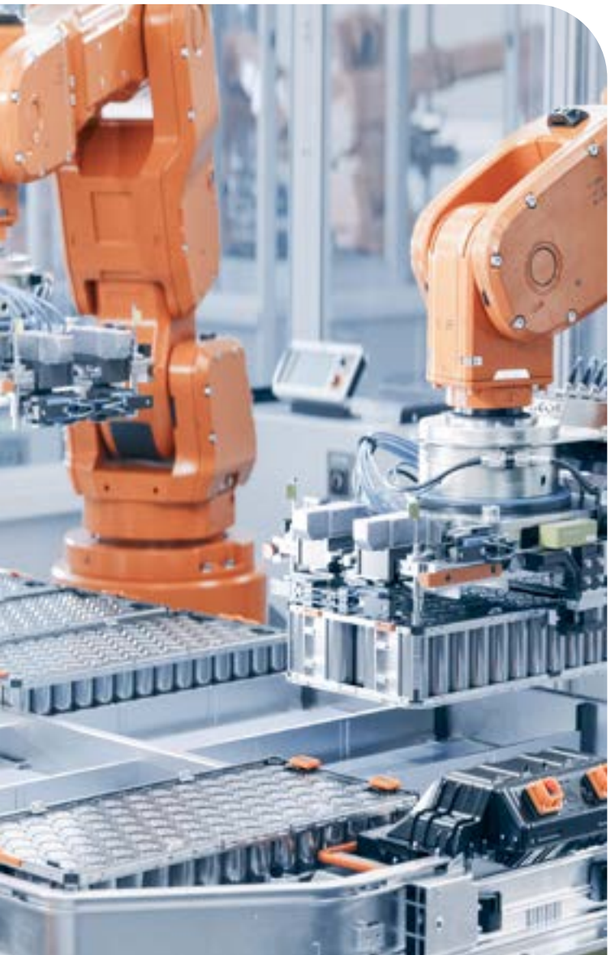
Precise Leak Detection for Battery Modules and Packs

INFICON

Every leak detected. Every pack protected.

The BES4000 introduces a new level of precision in battery leak testing, addressing one of the most critical quality and safety challenges in modern cell and pack manufacturing: finding electrolyte leaks after assembly and welding of battery modules and packs. At its core, the system relies on the principle of electrolyte sniffing – a non-destructive method that enables manufacturers to reliably detect smallest traces of electrolyte vapors escaping from defective cells.

The BES4000 can be used as a sniffer leak detector to pinpoint electrolyte leaks but also supports accumulation testing within closed battery packs, ensuring even smallest gas leaks are detected with high reliability.



End-of-line leak testing of assembled battery packs ensures high battery safety when installed in electric vehicles. Proper leak testing will increase the longevity of your battery packs by identifying defects that may lead to fast degredation and will ultimately reduce warranty cost.

Driving Safety, Quality, and Sustainability

- ✓ **Leak testing of assembled battery packs** - identifying electrolyte leaks using the pack housing as accumulation chamber.
- ✓ **Final Assembly Rework** – Pinpoints leaking cells inside large modules or packs, enabling quick replacement of cells for efficient rework of the pack.
- ✓ **Cell Manufacturing Feedback** – Localizes microscopic leaks when cells fail end-of-line electrolyte testing, helping engineers trace issues back to root causes.
- ✓ **Future-Ready** – Supports large-format packs and cell-to-pack architectures.

Reducing Costs, Increasing Sustainability

Fast, accurate leak detection reduces costly waste, while high sensitivity detects even the smallest defects before they become critical. The BES4000 can be flexibly integrated into various production environments, supporting both integral inline testing and targeted localization for rework. As a result, manufacturers benefit from greater process efficiency, and long-term product performance meeting the highest safety and quality standards.

Perfect Match with ELT Vmax

In cell and module production, the BES4000 is the ideal complement to the ELT Vmax electrolyte leak detector. While the ELT Vmax identifies if cells fail electrolyte leak testing, the BES4000 pinpoints the exact leakage location, creating a closed feedback loop ensuring reliable quality control and enabling process optimization throughout battery production.

COLOR TOUCHSCREEN DISPLAY

- Intuitive HMI with easy menu navigation
- Flexible configuration options for various applications
- Leakage rate trend indicator for clear visualization
- Efficient detection process with optimized usability

CALIBRATION PORT

- Effortless operation—calibration starts automatically
- Fast function testing with just one step
- Maximum reliability through simple sniffer tip insertion

INTERFACES

- USB interface for easy data transfer and storage
- Simple software updates performed by trained staff
- Variety of analog and digital interfaces via I/O module
- Bus modules for integration into local networks

SNIFFER PROBE

- Dual-inlet design minimizes false alarms and enables precise pinpointing
- LED lights in the sniffer probe notify the user when the allowable leakage rate is exceeded

ADVANTAGES AT A GLANCE

- ✓ Finding smallest leaks thanks to high sensitivity
- ✓ Sensor only reacts to electrolyte vapors
- ✓ Preventing false alarms due to background with dual inlet
- ✓ High durability with long-life infrared sensor
- ✓ Quick response time for accurate pinpointing of leaks
- ✓ Fast recovery from gross leak for high uptime
- ✓ Calibrated leak rate traceable to national standards

BES4000 Battery Electrolyte Sniffer Leak Detector

TECHNICAL DATA	
Smallest detectable leak rate	0.5 g/a DMC (1 ppm)
Leak rate unit	g/a, lb/yr, oz/yr, ppm
Detection sensor	IR technology
Response time	< 1 s
Interfaces	PROFIBUS, PROFINET, DeviceNet, EtherNet/IP, serial interfaces (RS232), digital I/O
Dimensions (diameter, height)	266 mm, 365 mm
Weight	4.5 kg
Operating languages	German, English, Spanish, Korean, Chinese, Japanese

ORDERING INFORMATION

BASE UNITS:

Products	Cat. No.
BES4000 with battery electrolyte handprobe and internal calibrated leak The base units include a sniffer line (4.8 m) and a standard sniffer tip (100 mm).	610-001

OPTIONS, ACCESSORIES:

IO1000 module (input / output module)	560-310
Profibus module PROFINET IO module Device Net module Ethernet/IP module Other fieldbus systems on request	560-315 560-316 560-317 560-318
Data cable (for BUS-modules or IO1000): • 2 m cable length • 5 m cable length • 10 m cable length	 560-332 560-335 560-340

Products	Cat. No.
Sniffer tip 100 mm	511-021
Sniffer tip 400 mm	511-024
Sniffer tip 400 mm pre-bent to half circle	511-022
Extensions for sniffer tip:	
• 400 mm	511-020
• 500 mm, 45° angled	511-029
Extension for hand probe cable (4.8 m)	511-040
Replacement internal calibrated leak	511-010

CONSUMABLES:

Filter holder for sniffer tip (20 pieces)	511-027
Sealing blocks (5 pieces)	611-001
Replacement internal calibrated leak	511-010

ALSO IN OUR PRODUCT PORTFOLIO:

The ELT series of electrolyte leak detectors—ELT Vmax and ELT3000 PLUS—offers reliable solutions for every stage of battery production, ensuring precise, non-destructive testing using the electrolyte as a tracer medium. Scan the QR code for more information.

INFICON Inspired by visions. Proven by success.

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

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