Product Specifications

The Thermo Scientific EGIS Defender Explosives Trace Detection (ETD) system combines cutting edge technology and performance with rugged packaging, portability, reliability and ease of use. The highly flexible dual technology platform provides extremely low false positives for high inspection throughput to assure the success of security missions around the world.

Thermo Scientific EGIS Defender

Portable lightweight desktop explosives trace detection system

Features and Benefits

- Low cost of ownership
- Reduced obsolescence
- High performance & fast results
- Accurate analysis with highest sensitivity and lowest false alarm rate
- Ease of use and operation
- Ease of maintenance
- Remote diagnostics
- Integrated touch screen
- Expanded explosives library
- Enhanced sensitivity
- Internal 40 GB hard disk drive

The next generation Thermo Scientific explosives detection system is based on our patented high-speed gas chromatography (HSGC) technology combined with micro differential ion mobility spectrometry (DMx), setting a new benchmark for performance in the high-end explosive trace detection system market.

With the combination of these dual technologies, the Thermo Scientific EGIS Defender offers the highest performance available and simultaneously detects plastic, commercial, and military explosives, TATP, HMTD and nitrates, in a lightweight package.

Among the most significant features of the EGIS™ Defender is its ability to detect new and emerging threats through software upgrades, eliminating the risk of technology obsolescence.

Technology

High-speed gas chromatography with micro differential ion mobility spectrometry (HSGC-DMx).

Applications

- Aviation screening at security checkpoints, hold baggage and cargo
- Control of military access points and border crossings
- Critical infrastructure, including nuclear power facilities and chemical plants
- Commercial and federal buildings, including embassies, corporate mail rooms and high-rise facilities
- High-security events, such as conventions and major sporting venues

Benefits / Features

- *Low Cost of Ownership:* By providing low cost consumables, simple field maintenance, and eliminating the need for carrier gas bottles, the overall cost of ownership remains very low
- *Reduced Obsolescence:* Using HSGC combined with DMx technology, the Defender detects both new and emerging threats, such as TATP and HMTD, ensuring the device will not be rendered obsolete due to new threats
- *Performance:* Provides consistent and fast results ensuring a high level of passenger and baggage throughput, while experiencing very few false alarms
- *Accurate Analysis:* Provides the highest sensitivity with the lowest false alarm rate while detecting trace levels of explosives
- *Ease of Use and Operation:* Simple to set up and is ready for operation within 30 minutes. Also uses an intuitive color touch screen for ease of operation
- *Ease of Maintenance:* Routine calibration not required and utilizes automated cleaning which allows for a lower skill level for operation and maintenance. In addition, the EGIS Defender also provides remote diagnostics for maintenance, software updates, and trouble shooting allowing for simple on-site field upgrades
- *Remote Diagnostics:* Used for maintenance, software updates, and trouble-shooting, allowing for simple on-site field upgrades (Internet connection required)

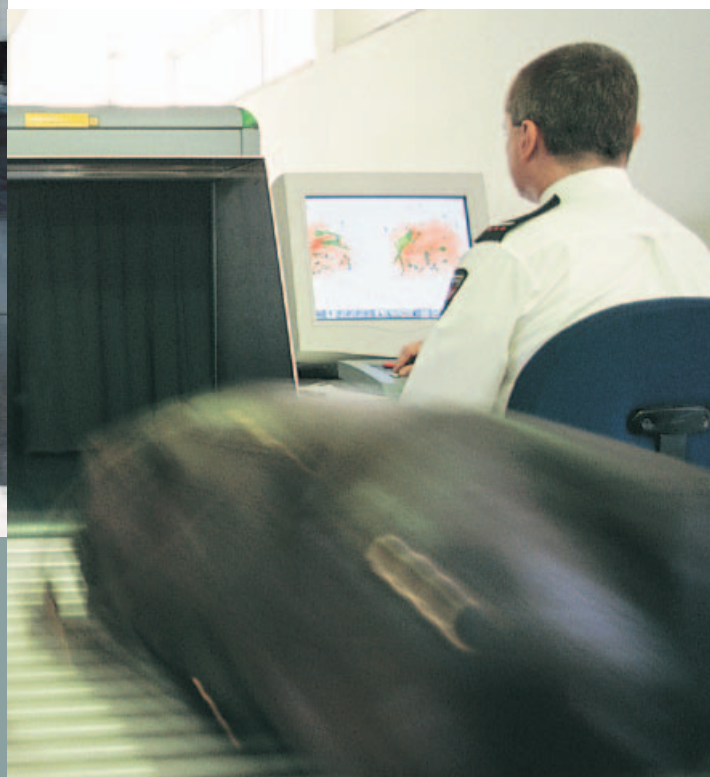
EGIS Defender Technology vs. IMS/ITMS

The ideal laboratory method for separating compounds of interest out of a complex mixture is by a technology known as gas chromatography. The EGIS Defender uses high-speed gas chromatography (HSGC) to separate explosives out of any sample matrix, allowing for extreme accuracy. Once the explosives are separated, the EGIS Defender employs a second technology known as Micro Differential Ion Mobility Spectrometry (DMx) to provide detection of explosive compounds down to the sub-nanogram level.

Micro Differential Ion Mobility Spectrometry (DMx) technology allows for detection of the new and emerging threats, such as TATP, facing security professionals today. With the powerful combination of HSGC and DMx, the EGIS Defender will also meet the emerging threats of tomorrow, eliminating the risk of technology obsolescence.

Unlike existing analytical methods, Thermo's DMx employs dedicated positive and negative ion detectors running simultaneously, significantly improving the ability to detect peroxide-based explosives such as TATP. Competing systems either alternate between detecting positive/negative ions or may even be limited to tracking only positive or negative ions, greatly reducing sensitivity and overall effectiveness in detecting the full range of threats.

With advances in HSGC technology, the need for helium or hydrogen carrier gas for operation is no longer required. Environmental factors such as humidity, daily temperature and barometric pressure changes, altitude, and pollution do not affect operation as they are known to do with traditional IMS/ITMS.



Interferences/False Positives
As for interferences and masking agents, EGIS Defender has the ability to successfully confirm the absence of explosives despite the presence of interferences and can successfully determine the presence of explosives despite the presence of agents known to disguise explosives. The combination of these two technologies results in very low false positive identification and false negative misses, without sacrificing sensitivity.

IMS/ITMS Technology Deficiencies
IMS/ITMS systems rely on only one technology for identification; so accuracy, sensitivity, and compounds detected must be traded off against each other to achieve only marginal results.

- As more unknown compounds are added to the IMS/ITMS compound reference library, or additional explosive compound identification is required, accuracy and/or sensitivity must be sacrificed. IMS/ITMS field units typically produce greater than 2-3% false positives when operating at marginal sensitivities. False positives add significant costs and time, especially for vehicle and cargo screening operations.
- When a system routinely alarms falsely, the operators may potentially become lax. Once they lose confidence in the system, the opportunity exists for careless operation, resulting in undesirable consequences. In addition to slowing down throughput and causing other logistical issues, false positives also create a dangerous situation.

Sensitivity
The sensitivity advantage of the EGIS Defender allows for detection of low vapor pressure explosive compounds, such as plastics (RDX, PETN, C4, Demex, and SEMTEX)—providing an even greater probability of detection.

Reliability
Although high-speed gas chromatography (HSGC) is well known for its usefulness as a forensic laboratory technology, the EGIS Defender system has been designed to withstand the demands of real-world deployment; global airports, embassies and large venues depend on Thermo Scientific HSGC technology to provide maximum security. The EGIS Defender system, with its small footprint and lightweight package, is designed to be either repaired in the field, or returned to the manufacturer for repair. Field repairability is a key advantage when supporting systems in countries around the world.

Training and Support
Thermo Fisher Scientific routinely holds advanced training programs for engineers and maintenance personnel. Once properly trained, they have access to technical support via telephone. On-site technical support packages are also available. Thermo Fisher Scientific is capable of supporting installations around the globe, with major service centers in Germany, U.K., Japan, U.S., and Saudi Arabia—along with several other satellite locations.

Ease of Use
The EGIS Defender is designed to be easy to use for all operator skill levels. The system automatically starts, interprets results, and monitors itself for optimum performance.

The EGIS Defender can be used at border crossings and check points around the world

The EGIS Defender explosive trace detection system is a highly sensitive device developed to detect various types of commercial and military explosives. You can be confident that our versatile solutions and worldwide customer support will ensure you maximum productivity.

Thermo Scientific EGIS Defender

General Specifications	
Technology	High-speed gas chromatography (HSGC) with micro differential ion mobility spectrometry (DMx)
Detection Mode	Full-time simultaneous positive/negative mode
Explosives Detected	Nitrates (AN/UN), EGDN, NG, DNT/TNT, PETN, RDX, TATP, HMTD, Tetryl and Taggents
Explosives Lower Detectable Limits	Nanogram level
Analysis Cycle	16 seconds
Start-up Time	30 minutes
Display Color	LCD and integrated touch screen
Alarm Notification	Audible and visual
Packaging – Standard	IP-20
Operational Temperature Range	0°C to +40°C (+32°F to +103°F)
Storage Temperature Range	-20°C to +50°C (+14°F to +122°F)
Operational Humidity Range	5% to 95% non-condensing
Power Input	100–120 / 200–240 VAC 47–63 Hz
Dimensions	560 mm (22 in) W x 560 mm (22 in) L x 250 mm (10 in) H
Weight	27 kg (60 lb)
Radioactive Source	Ni63/5 Millicurie

About Thermo Fisher Scientific

Thermo Fisher Scientific Inc. (NYSE: TMO) is the world leader in serving science. Our mission is to enable our customers to make the world healthier, cleaner and safer. With revenues of more than $10 billion, we have approximately 35,000 employees and serve customers within pharmaceutical and biotech companies, hospitals and clinical diagnostic labs, universities, research institutions and government agencies, as well as in environmental and process control industries. We create value for our key stakeholders through two premier brands, Thermo Scientific and Fisher Scientific, which offer a unique combination of continuous technology development and the most convenient purchasing options. Our products and services help accelerate the pace of scientific discovery, and solve analytical challenges ranging from complex research to routine testing to field applications.

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