

# 1st Detect

VISIT US AT BOOTH #119



**1ST DETECT'S MINIATURE CHEMICAL DETECTOR** is an ion trap mass spectrometer for field portable and handheld applications. By leveraging advances in low power electronics and miniaturization technologies developed under the Space Program, 1st Detect is able to offer a fully functional Miniature Chemical Detector that is significantly smaller and lighter than those currently available. The 1st Detect Chemical Detector offers the capabilities and performance of a large laboratory mass spectrometer, including a wide mass range, low detection limit, MSn capability and membrane inlet in a low power portable instrument.

## FEATURES

- 1st Detect is able to provide a wide variety of custom products to suit your unique application. Our offerings include, but are not limited to:
  - Custom Detection Ranges** - The instrument can be tuned to provide broad-based capabilities or tailored for specific applications. Applications include peptide analysis and POC diagnostics.
  - Custom Sample Collection** - 1st Detect's Miniature Chemical Detector can be coupled to a wide variety of sample collection or pre-concentration/separation systems to suit the needs of a particular application. These include GC/LC, API sources, thermal desorbers, SPME, and many other custom sample inlets.
  - Networking** - For remote monitoring and distributed sensor networks, a variety of networking protocols can be implemented including Ethernet, Wi-Fi, RF and proprietary protocols. This includes popular mobile networking protocols (CDMA, TDMA, GSM, 3G, etc.)
  - Pump-less Systems** - For applications that do not require external pumping (e.g. semiconductor process control), we can provide the advanced chemical detection capabilities without the integrated vacuum pumping system.
  - Battery Operation** - For field portable systems, 1st Detect can offer an integrated rechargeable power source using standard UBI-2590 batteries or standard 12/24 VDC vehicle power.
  - OBM Component** - For applications where customer packaging is desirable, 1st Detect can provide the core functionality and packaging for in-house or customer specified systems (e.g. IIMS, MS, GC/MS) where a development partner supplies the front-end hardware.

## APPLICATIONS

- Industrial Process Control**
  - Semiconductor manufacturing monitor
  - Process/Quality control monitor
  - Water & Wastewater
- Security and Defense**
  - Portable CW/NTC detector
  - Porta explosive/chemical detector (e.g. airports)
  - Remote perimeter monitor
  - Container and port security
- First Response/Critical Infrastructure**
  - Portable Haz-Mat detector (law enforcement)
  - Public water supply monitoring
- Medical**
  - Point of Care diagnostics
  - Low-cost laboratory analyzer
  - Surgical gas analyzer
  - Pre-natal

## SPECIFICATIONS

- Weight** - <15 lbs (-6.8 kg)
- Mass Range** - 10 - 450 amu
- Chemicals Detected** (examples)
  - CW: GB, GBX, mustard, cyanides
  - Explosives: RDX, PETN, TNT, DNT, FOX
  - TCX per NJ Guide 100-00 and per IIR-40
  - Contraband: THC, cocaine, amphetamines
- Resolutions** - <1 amu
- Analysis Times** - <2 seconds or supplied batteries
- Power Supply** - 120/240VAC, 24VDC
- Low False Alarm Rate** - True Mass Spec (not MS) and MSn Capability

## CRITICAL INFRASTRUCTURE PROTECTION

- TERROR THREATS
- AIR QUALITY MONITORING
- PERIMETER PROTECTION
- PORTABLE DETECTION
- HVAC MONITORING
- WATER SUPPLY MONITORING



## INDUSTRIAL PROCESS CONTROL (IPC)

- RESIDUAL GAS ANALYSIS
- PROCESS CONTROL MONITOR
- QUALITY CONTROL MONITOR
- POLLUTION AND ENVIRONMENTAL CONTROL
- ENERGY PRODUCTION OPTIMIZATION



## SECURITY

- FIRST RESPONDERS
- AIRPORT SCREENING
- PERIMETER VEHICLE AND CARGO SCREENING
- COAST GUARD INSPECTION OF SUPPLIED BATTERIES
- CRITICAL INFRASTRUCTURE PROTECTION & BUILDING SECURITY



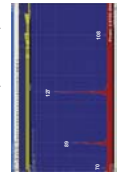
## HEALTHCARE

- POINT OF CARE DIAGNOSIS
- LOW COST SATELLITE LABORATORY ANALYZER
- SURGICAL GAS ANALYZER
- NEWBORN SCREENING
- QUICK ASSESSMENT FOR FIRST RESPONDERS AND PARAMEDICS



## MSn CAPABILITY

- MSn Involves two key steps:**
  - Isolation
  - Fragmentation
- Isolation**
  - 1<sup>st</sup> Detect successfully demonstrated isolation (as seen above)
- Fragmentation**
  - Advanced trap action under development (as seen above)
- Currently operating MSn (3 amu window)**



## MMS NETWORKING CAPABILITY

- Developing Capability for MMS secure communication and control via network** (e.g. Ethernet, wireless LAN, RF, Wi-Fi, GSM, 3G, TDMA, CDMA, etc.)
- Network Independent**
  - Have demonstrated Ethernet, Wi-Fi, 3G to date
  - Anticipated to be compatible with military and proprietary protocols
- Designed for distributed sensor networks**
- Platform independent architecture**
- Instrument independent architecture**
- GPS location reporting**



Tetrahydroethylene