

Bruker Detection Corporation - Rapid Plus Standoff Chemical Detector



GENERAL DESCRIPTION:

The RAPID is a highly reliable infrared detector for stand-off detection of chemical agent clouds. All known chemical warfare agents (CWA) and important Toxic Industrial Chemicals (TICs) are automatically monitored. The lightweight system can be mounted on vehicles, ships and helicopters, and performs real-time field screening while underway. Sensor, scanner, electronics and control unit are integrated into one compact housing. The RAPID is based on the proven Bruker RockSolid™ flex-pivot interferometer, and is resistant to mechanical shocks, vibrations, humidity and extreme temperatures. It is hardened for field operations in harsh and rugged environments. All this distinguishes the RAPID as an efficient and reliable chemical agent detector for field screening.



The RAPID features:

- Remote detection of atmospheric pollutants and chemical warfare agents
- Robust and compact design
- Low weight
- Minimal power consumption
- Low detection limits
- Fast measurement and alarm
- Continuous monitoring while in motion
- Chemical cloud tracking and increased situational awareness for critical area or event coverage
- Can detect over 90 chemical compounds up to 5 KMs line of sight

TECHNICAL DESCRIPTION:

IR Spectroscopy is an accepted and widespread analytical procedure which can be applied to many different chemical species. Since different functional groups of chemical compounds absorb light at specific frequencies, this technique has proven to be useful for the broadband passive remote detection of chemical agents in the range of 7 to 14 μm (700-1300 cm⁻¹). This RAPIDplus infrared spectrometer is an FTIR instrument controlled by an integrated processor system and an embedded PC.

Tier Selection

Final tier assignment is based on overall product score.

- Top Tier
- ◐ Second Tier
- Third Tier
- ◑ Fourth Tier
- Bottom Tier

RANKINGS

	Biological	Chemical	Radiological
FIELD USE System	N/A	○	N/A
MOBILE Laboratory	N/A	◑	N/A
DIAGNOSTIC Laboratory	N/A	◑	N/A
ANALYTICAL Laboratory	N/A	◑	N/A

CONTACT INFORMATION

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COST

- \$300,000/system
- N/A/analysis

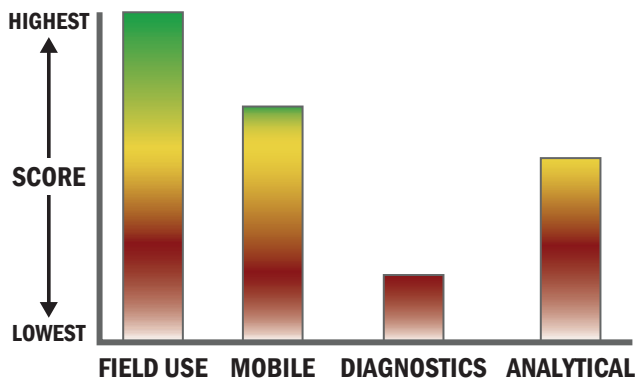
Survey Source

Vendor Supplied Information



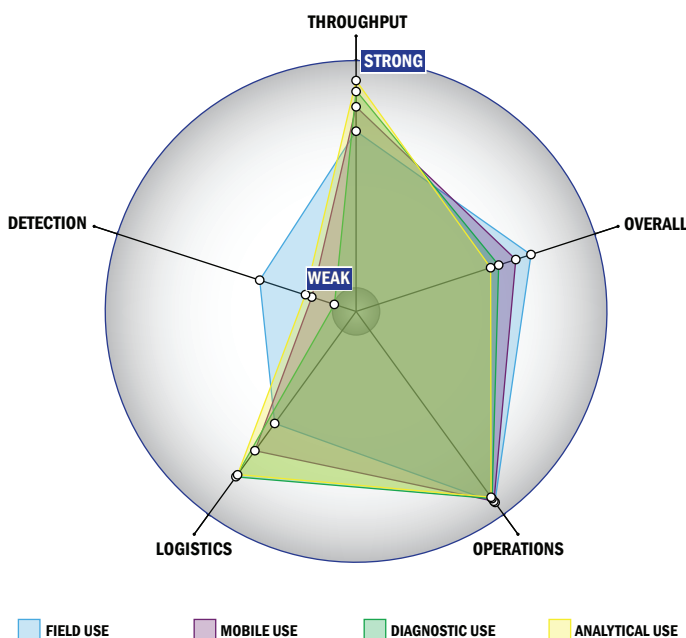
Scoring Analysis

System scores are compared across the four scenarios and ranked from highest to lowest.



Impact Chart

The Impact Chart is a spider graph representing specific categories and designed to give the reader a visual depiction of how a particular system is expected to operate across the four different scenarios. The score for each of the seven categories is presented as the percentage of the total possible score. Higher category scores extend the spokes of a graphic toward the outer edge of the chart. The area graphed for each of the four scenarios relates to how well the system performed in that scenario. Graphics for each of the four scenarios are super-imposed for ease of comparison.



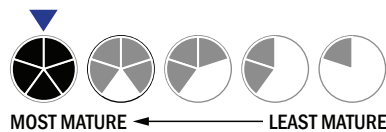
Evaluation Criteria

Throughput:

- Detection is instantaneous
- Continuous operation with no defined runs
- System is continuous and provides real time analysis with no defined tests/samples
- The system or device is currently fully automated
- Device or system is intended for multiple detection assays
- 0 components
- 5-10 minutes is required for set-up
- Automatic detection

Logistics:

- An afternoon of training and some technical skills required
- Approximately the size of a carry-on luggage suitcase
- Between 25 and 50 kg
- Wireless and wired connections are available
- System or device has 110V electrical requirement



Operations:

- Can be used from -21°C to 42°C (All temperatures)
- Performance is not influenced by relative humidity
- Greater than 10 years expected life
- Results can be viewed in real-time
- The system or device is currently fully autonomous
- The system software is closed and not available for modification
- The system hardware is closed and not available for modification

Detection:

- This system does not test liquids
- Excellent specificity. System has occasional false alarms under certain conditions ($<2\%$)
- 1×10^{-4} - 1×10^{-3} mg/m³