



# Down Range Chemical and Explosives Identification

Thermo Scientific FirstDefender RM and RMX

# Raman spectrometer for rapid, accurate identification of unknown chemicals

Responder and community safety are critical when analyzing potentially hazardous materials. The Thermo Scientific™ FirstDefender™ instruments, deployed worldwide by military personnel and civilian first responders, deliver exceptional chemical identification capability for a range of response scenarios.

## Key Benefits:

- **Fast, accurate identification.** Based on Raman spectroscopy, quickly identifies unknown solid and liquid chemicals down range.
- **Built for field use.** MIL-STD-810G and IP67 tested and certified.
- **Easy to use.** Intuitive, menu-driven interface for fast training and proficiency.
- **Flexible use modes.** Handheld use or easily connected to select tactical robots using optional integration kit.
- **Improved automatic mixture analysis.** Sophisticated algorithms automatically determine presence of mixed and contaminated chemicals.
- **Point-and-shoot™ sampling.** Operates directly through sealed glass or plastic containers, avoiding exposure to potentially harmful substances.
- **Extensive substance library.** Identifies explosives, toxic industrial chemicals (TICs), chemical warfare agents (CWAs), narcotics, precursors, white powders and more.



**Color-coded results require no user interpretation and provide rich content for faster, more informed decision making. Patented algorithms enable automatic mixture analysis, shown as a blue result, and tagged items are clearly highlighted on the result screen. Onboard NIOSH and CAMEO guides provide detailed hazard information.**



## RMX Model additions

The FirstDefender RMX can be mounted to select tactical robots via a third party integration kit.



The size of the buttons and the large display improves usability in the field.



The FirstDefender RMX instrument is not ITAR-restricted, though a U.S. Department of Commerce export license may be required for some countries.



Specifications	FirstDefender RM	FirstDefender RMX
<b>Weight</b>	1.8lbs (800g)	2.0 lbs (919g)
<b>Size</b>	7.6 x 4.2 x 1.75 in (19.3 x 10.7 x 4.4cm)	7.7 x 4.5 x 2.4 in (19.6cm x 11.4cm x 6.1cm)
<b>Use Mode</b>	Point-and-shoot through translucent containers integrated vial holder	Flexible: handheld with fixed probe; vial mode; or robot-mounted
<b>Spectral Resolution</b>	7 to 10.5 cm <sup>-1</sup> (FWHM) across range	7 to 10.5 cm <sup>-1</sup> (FWHM) across range
<b>Working Distance</b>	~16 mm without nose cone; ~5mm with nose cone	~16 mm without nose cone; ~5mm with nose cone
<b>Laser Output</b>	Power Adjustable, 75 mW, 125 mW, 250 mW	Power Adjustable, 75 mW, 125 mW, 250 mW
<b>Survivability</b>	Independently tested for MIL-STD-810G and IP67 certification	Independently tested for MIL-STD-810G and IP67 certification
<b>Exposure</b>	Manual, Automatic modes (5ms minimum)	Manual, Automatic modes (5ms minimum)
<b>Scan Delay</b>	Optional; user-configurable delay up to 120 seconds	Optional; user-configurable delay up to 120 seconds
<b>Battery</b>	Removable and rechargeable lithium ion battery or 123a (eg SureFire™) batteries; >4 hours operation	Removable and rechargeable lithium ion battery or 123a (eg SureFire™) batteries; >4 hours operation
<b>External Power Supply</b>	DC Wall Adapter, 12 V 1.25 A	DC Wall Adapter, 12 V 1.25 A
<b>Operating Temperature</b>	-4 °F to 122 °F (-20 °C to +50 °C) Continuous	-4 °F to 122 °F (-20 °C to +50 °C) Continuous
<b>Robot Integration</b>	N/A	Integration kit required from robot manufacturer for mounting and universal control. Contact sales. chemid@thermofisher.com for more information about supported interfaces.
<b>Onboard Mixture Analysis</b>	Identification of up to 4 components in a mixture	Identification of up to 4 components in a mixture

Note: Complete test reports available upon request.

## Continuous Innovation

FirstDefender analyzers continue to evolve to meet the demanding requirements of elite military personnel and civilian first responders. Improved algorithms and tagging ensure that the instrument offers military organizations, hazmat teams, bomb squads and law enforcement personnel a unique tool for identification of various threats.

## Complementary and Confirmatory

Raman spectroscopy and FTIR spectroscopy, the underlying technologies in the FirstDefender and TruDefender product families, are highly precise and selective optical techniques, each offering distinct advantages in specific applications. When used together, FTIR and Raman spectroscopy provide confirmatory results and a broader range of unknown substance identification—leading to better protection for the responder and the community.



Find out more at [thermofisher.com/firstdefender](http://thermofisher.com/firstdefender)