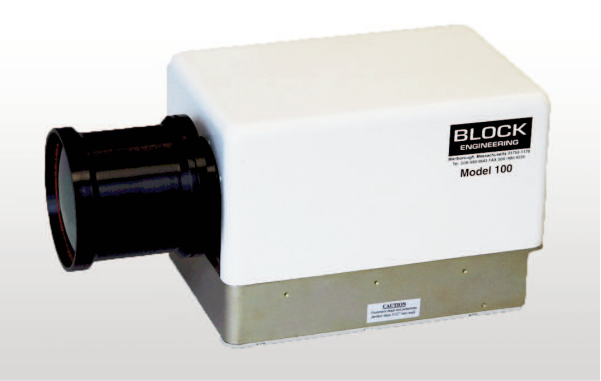
BLOCK engineering

M90 / M100 Spectrometer



Summary

- Small, rugged, lightweight, highly sensitive passive FTIR
- 7-12 micron operating range
- Available with either a 1.5 or .5 degree field of view
- Stirling engine cooled HgCdTe detector

Key Benefits & Advantages

- Detects chemical weapons plumes up to 5 km away
- No active source – low probability of detection
- Field proven and rugged

Description

The M90/100 is a small, rugged, lightweight, highly sensitive Fourier Transform Infrared (FTIR) spectrometer that incorporates Block's decades long experience developing and delivering sophisticated instruments.

The M90 is offered as an OEM engine and it is currently installed inside the Mobile Chemical Agent Detector (MCAD) system, which protects critical buildings in the Washington Capital Region.

The M100 is a standalone device that provides spectral readings for subsequent data processing by the users and it is being used today by several government and DoD customers.

Feature Differences of the M90 and M100

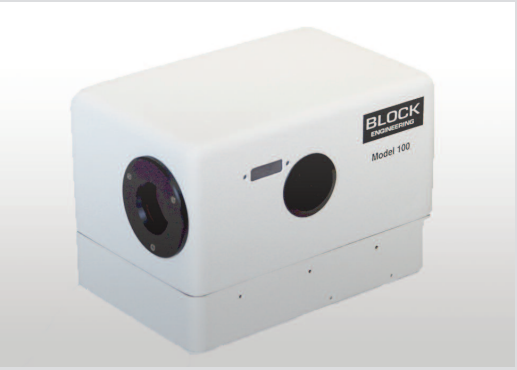
M90: OEM Engine

The M90 is one of Block's standard, fully developed products and has been shipped to various OEM partners over the past 10 years. Among other applications, the M90 is currently the key component inside the Northrop Grumman Mobile Chemical Agent Detector (MCAD) installed at the National Capital region to protect critical installations against chemical terrorism attacks.

M100: Integrated Spectrometer

The M100 differs from the M90 in that it is fully enclosed and packaged as a standalone product, rather than an OEM product. The M90/M100 is a compact, ruggedized and military hardened Fourier Transform Infrared (FTIR) Spectrometer, which incorporates Block's decades of design and field experience.

The device operates in the 7-12 µm range and provides spectral readings for subsequent processing by the users. Spectral resolutions are operator selectable from 2 cm^{-1} to 16 cm^{-1} with scan rates reaching 22 scans per second.



Model 100 without telescope attachment

Parameter	Specification
Sensor Type	Michelson
Spectral Range	7 to 13 µm
Spectral Resolution	(2 opt) 4, 8, 16 cm^{-1}
Scan Format	Single-sided
Field-of-View (see Narrow option)	1.5 x 1.5 degrees
Scan Rate @ 4 cm^{-1}, 10 cm/sec	22 (nominal) spectra/sec
Retardation Rate (see options)	1.25, 2.5, 5, 10 (pick one) cm/sec
Sampling Freq. @ 1x	20, 40, 80, 160 kHz
NESR (13µm, 769 cm^{-1})* per scan	< 14.1 x 10^{-9} watts/($cm^2 cm^{-1}$Sr)
NESR (11µm, 909 cm^{-1})* per scan	< 12.7 x 10^{-9} watts/($cm^2 cm^{-1}$Sr)
NESR (8µm, 1250 cm^{-1})* per scan	< 7.92 x 10^{-9} watts/($cm^2 cm^{-1}$Sr)
Laser Reference	0.63µm HeNe Laser
White Light	Yes
Signal Detector	HgCdTe, D*peak> 4 10^{10} cm $Hz^{1/2}$/Watt
Detector Size	0.5 mm x mm
Detector Cooling	Closed Cycle Stirling
System Power	< 30 (steady state) Watts
System Voltage Input	28 (+4, -7) VDC
Physical Size (LxWxH) w/o Tscope	22.9 x 15.2 x 15.9 cm (9 x 6 x 6.25 inches)
System Weight	~ 12 Pounds
Mounting	Hard Mounted
Mounting Orientation	Any Orientation
Operating Temperature	0 to 50 Deg. C
Output Signal	16 Bit Digital RS-422
Cable	12' Power/Comm cable, to 15 Pin D, 9 Pin D, % Pin Power
Test Box & Cable	Included
Option - Narrow Field-of-View	0.5 x 0.5 Degrees
Option - Aperture Size	7.8 cm
Option - Retardation Rates	1.25, 2.5, 5, 10 cm/sec

(*At 4cm^{-1} resolution, 10 cm/sec)

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