

# PORTHOS™ PORTABLE CHEMICAL DETECTION

## Summary

- Portable passive FTIR
- On board spectral processing
- Rapid identification of Chemical Warfare Agents (CWAs), Toxic Industrial Chemicals (TICs) and other gases

## Key Benefits & Advantages

- Compact, lightweight, rugged design
- Real-time, built-in video and spectral analysis
- Battery operated



## Description

PORTHOS™ is a small, rugged, lightweight, highly sensitive multiple chemical agent detector and identification system, based on Block's proven and validated passive Fourier Transform Infrared (FT-IR) technology. It works in the long wave infrared spectral band, functions day or night, and is capable of either short or long term operation in military or Homeland Security ground or air operation.

Within seconds it detects and presents to the user the name of a dangerous chemical vapor at distances of 0.1 to 5 km. Stored data includes raw interferograms, alarm type and time. The unit has both automated self-calibration and status monitoring of all critical points.

One important feature of the PORTHOS is that the chemical detection processing is done "on board" within the PORTHOS electronics and only a low bandwidth detection signal need be sent to a command/control center or recorded on board.

PORTHOS detects and identifies all the Military C-Agents (Nerve, Blood, and Blister) required of the JSLSCAD system and has been tested against the full list of military interferents.

The following lists of TICs have been programmed and tested in a chamber: Ammonia, Boron Trichloride, Phosgene, Nitric Acid, Sulfur Dioxide, Arsine, Boron Trifluoride, Carbon Disulfide, and Hydrogen Cyanide. Additional chemicals can be programmed as needed.

## Other Product Configurations

Block has adapted PORTHOS for airborne applications including use in UAVs. The system is available in two standard variations: 0.5 and 1.5 degree Field of View. The system is handheld or can be tripod mounted and comes with a rail for alignment/observation accessories.

PORTHOS incorporates a compact packaging of Block's M-100 chemical sensor, which has been tested extensively by US and foreign governments.

Parameter	Specification
IR Wavelength Range	7.5-13.5 $\mu\text{m}$
Field of View (FOV)	1.5° or .5°
Spectral Acquisition Rate (@ 8 $\text{cm}^{-1}$ & 5 $\text{cm}/\text{sec}$ )	20 spectra/sec
Noise Equivalent Spectral Radiance (at 4 $\text{cm}^{-1}$ resolution, 10 $\text{cm}/\text{sec}$ )	
NESR (13 $\mu\text{m}$ , 769 $\text{cm}^{-1}$ ) per scan	< 14.1 x 10 <sup>-9</sup> watts/( $\text{cm}^2\text{cm}^{-1}\text{Sr}$ )
NESR (11 $\mu\text{m}$ , 909 $\text{cm}^{-1}$ ) per scan	< 12.7 x 10 <sup>-9</sup> watts/( $\text{cm}^2\text{cm}^{-1}\text{Sr}$ )
NESR (8 $\mu\text{m}$ , 1250 $\text{cm}^{-1}$ ) per scan	< 7.92 x 10 <sup>-9</sup> watts/( $\text{cm}^2\text{cm}^{-1}\text{Sr}$ )
Sensor Display	5.0" diagonal, 640x480 TFT LCD
Visible Camera	"Starlight-level" Sensitivity 1280x960 pixels
Indicators/Data	
Alarm	Named chemical species
Potential signal of interest	Prompts user to record spectra
Finger Touch Controls	Numerous functions controlled by user in camcorder fashion
Sensor Volume	Approx 0.5 $\text{ft}^3$
Sensor Weight	Approx 17 lbs
Sensor Dimensions	34.0 x 27.2 x 16.8 cm 13.4 x 10.7 x 6.6 inches
Software	Built-in, complete identification capability
Power	
Voltage	20-24 VDC
Startup/with Cal	70W from battery/external
Steady State (30°C ambient)	40W from battery/external
Additional if Charging	60W from external
Sensor Runtime	4 hrs typical
Environmental	
Operating	0 to 50°C
RH	0-95% non-condensing
Storage	-40 to 70°C
RH	0-100% non-condensing
Altitude	0-10kft (adaptable for higher altitudes)

### Block Engineering

377 Simarano Drive  
Marlborough, MA 01752  
p // 508.251.3100  
f // 508.251.3171  
info@blockeng.com  
[www.blockeng.com](http://www.blockeng.com)