

PORTHOS™ PORTABLE STANDOFF 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™ detects and identifies multiple chemical agents. It is a small, rugged, lightweight, highly sensitive 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 threats at distances of 0.1 to 5 km and presents to the user the name of a dangerous chemical vapor. 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 man portable 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 μm |
| Field of View (FOV) | 1.5° or .5° |
| Spectral Acquisition Rate (@ 8 cm^{-1} & 5 cm/sec) | 20 spectra/sec |
| Noise Equivalent Spectral Radiance (at 4 cm^{-1} resolution, 10 cm/sec) | |
| NESR (13 μm , 769 cm^{-1}) per scan | < 14.1 x 10 ⁻⁹ watts/($\text{cm}^2\text{cm}^{-1}\text{Sr}$) |
| NESR (11 μm , 909 cm^{-1}) per scan | < 12.7 x 10 ⁻⁹ watts/($\text{cm}^2\text{cm}^{-1}\text{Sr}$) |
| NESR (8 μm , 1250 cm^{-1}) per scan | < 7.92 x 10 ⁻⁹ watts/($\text{cm}^2\text{cm}^{-1}\text{Sr}$) |
| Sensor Display | 5.0" diagonal, 640x480 TFT LCD |
| Visible Camera | Low-Light Sensitivity 768x494 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 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 | -20°C 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) |

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