

Canary-One™ for Rapid Screening

Canary-One™, shown in figure 1, is a handheld sensor system for rapid screening. To operate, the system is simply introduced to the environment and turned on. Within approximately 20 seconds, results are displayed either on the integrated LCD screen or logged on an attached computer. The Canary-One™ will operate 4 hours on it's internal, rechargeable battery or it may use an external power supply.

Defiant can provide the appropriate components for UAV or UGV sensor payloads, and Defiant can also provide the gas module, shown next to a dime in figure 2, for OEM applications. At its size and weight, this this module could fit into even the smallest robotic systems. A data acquisition card with a similar foot print provides data out.

Figure 3 shows that the system combines two microfabricated components: a micro chemical preconcentrator and a SAW array detector. A designer chemical coating on the preconcentrator collects target analytes and ignores interfering chemicals. Canary-One™ cycles every 20 seconds reporting on the identification and concentration of the target analytes. The system self-cleans after each analysis.

Representative Data

Figure 4 shows detection of 2.4ppmv methyl salicylate (MeS) in 20 seconds. Figure 5 shows detection of 500 ppbv of DMMP in 20 seconds. This system can distinguish each individually. In addition, sensitivity for analytes can be enhanced by augmenting the materials coated on the SAW and preconcentrator.

Features and Specifications:

- Dimensions: 7.5x5.25x2.25 inches
- Weight: 600 g (1.31lbs).
- Power: 4 hours on rechargeable NiMH batteries or can use external 9V, 1A power.
- Computer interface: Standard RS-232 port
- Display: 2.1x0.75 inch LCD
- 20 second analysis cycle for nerve and blister agents
- Ambient air carrier gas, no need for specialty gases.



Figure 1. Canary-One™ Package

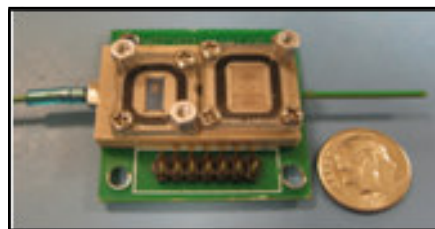


Figure 2. Canary-One™ Gas Module

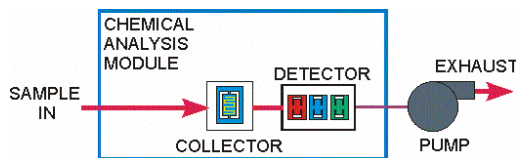


Figure 3. Canary-One™ Analysis Chain

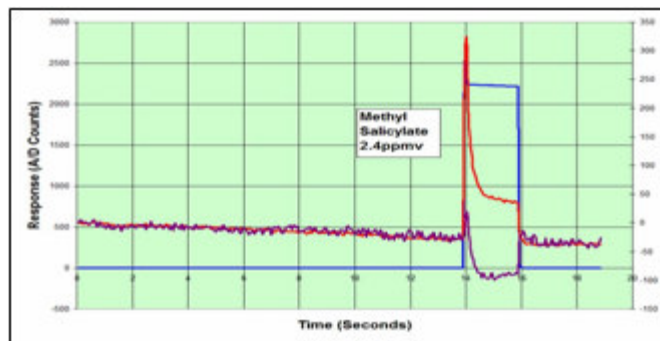


Figure 4. Detection of 2.4 ppmv methyl salicylate. Blue line is preconcentrator power, red line is SAW response.

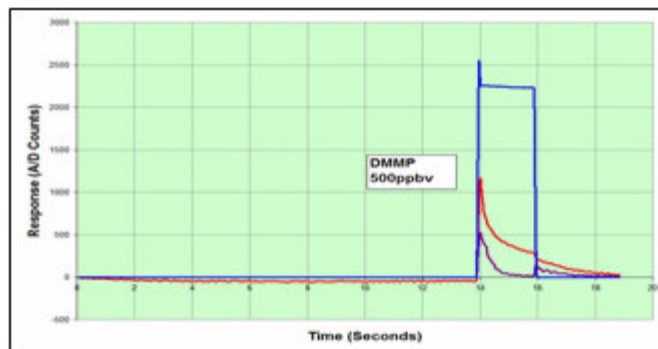


Figure 5. Detection of 500 ppbv DMMP. Blue line is preconcentrator power, red line is SAW response.