

# SCENTROID *TR10-H* WARDEN



## PORTABLE HYDROGEN FLUORIDE (HF) DETECTION FOR LITHIUM-ION BATTERY INCIDENTS

**DESIGNED, BUILT, &  
SUPPORTED IN CANADA**

The TR10 Warden is a portable early-warning detection platform engineered specifically for identifying Hydrogen Fluoride (HF) released during lithium-ion battery failures and thermal runaway events.

Using a high-sensitivity electrochemical HF sensor and remote sampling probe, the system allows emergency responders and industrial safety personnel to assess hazards from a safe distance.

### LITHIUM ION BATTERY THERMAL RUNAWAY

Hydrogen Fluoride (HF) is commonly generated when lithium-ion battery electrolytes decompose during overheating, venting, or thermal runaway events. HF may be released before visible flames develop, making it a valuable early-warning indicator during battery failure.

### » OPERATIONAL DEPLOYMENT MODES



#### PORTABLE MODE

Utilizes a lightweight handheld probe and integrated shoulder-mounted monitor, allowing operators to safely investigate suspect battery packs, electric vehicles, charging stations, battery storage containers, and industrial energy systems while maintaining distance.



#### STATIONARY MODE

Deploy the Warden near damaged battery systems, EV storage areas, battery energy storage installations (BESS), recycling facilities or charging infrastructure for continuous HF monitoring and incident assessment. Available kickstand upon request.

### » DEDICATED HF DETECTION PLATFORM

Purpose-built for rapid Hydrogen Fluoride detection during lithium-ion battery incidents, thermal runaway investigations, and battery storage safety operations.

#### TECHNICAL SENSOR SPECIFICATIONS

| THREAT CATEGORY        | SENSOR ID | SENSOR TECH.    | DETECTION RANGE | RESOLUTION |
|------------------------|-----------|-----------------|-----------------|------------|
| Hydrogen Fluoride (HF) | HFI       | Electrochemical | 0 – 20 ppm      | 0.1 ppm    |

**Optional Sensor Selection:** We carry a wide variety of compatible sensor technology. See our full sensor list at [www.scentroid.com](http://www.scentroid.com)

### » CORE PLATFORM SPECIFICATIONS



#### INGRESS PROTECTION

IP64-rated enclosure, ensuring protection against dust ingress and water splashes from all directions.



#### OPERATING TEMPERATURE

Performance verified across a range of -50°C to +50°C, suitable for extreme Canadian climates.



#### DIMENSIONS & WEIGHT

Highly portable at 221 x 168 x 64 mm with an operational weight of under 1kg (<980g)



#### CONSTRUCTION

Ruggedized enclosure featuring a rubberized impact bumper for enhanced durability and shock resistance.



#### INTERFACE

Designed for Level A/B PPE compatibility, the unit features a glove-friendly large-button physical interface paired with a high contrast backlit LCD touchscreen for intuitive navigation.



#### ALERTS

Integrated safety system including a 95 dB at 30cm audible buzzer and high-visibility visual hazard indication lighting for immediate notification in loud industrial environments



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Future of Sensory Technology



## ADVANCED POWER MANAGEMENT

The TR10 Warden features a triple-redundant power architecture to ensure continuous uptime during extended periods and multi-day CBRNE deployments.



### PRIMARY INTERNAL POWER

The device is powered by a high-capacity internal rechargeable Lithium-Ion battery, providing a minimum of 12 hours of continuous operation under standard monitoring conditions.



### V-MOUNTED SYSTEM

For missions requiring extreme longevity, the unit includes a ruggedized V-mount chassis. This allows operators to hot-swap high-density power packs without interrupting device operation or losing critical data.



### ALKALINE BACKUP

A 2-slot alkaline battery adapter serves as a critical failsafe. This allows the device to operate on standard, off-the-shelf alkaline batteries when charging facilities or dedicated Li-Ion packs are unavailable.



### POWER TELEMETRY

The on-board software provides advanced battery telemetry, displaying real-time remaining capacity and an estimated "time-to-empty" for both the primary internal battery and any attached backup power source.



RUGGED



LIGHTWEIGHT  
<1 KG



RAPID BOOT  
<10 SEC



MULTI-THREAT  
DETECTION



EXTREME  
CONDITIONS



## CONNECTIVITY AND COMMUNICATIONS



### WIRELESS NETWORKING

The platform is equipped with comprehensive wireless capabilities to facilitate real-time data transmission and location tracking:

- LTE, LoRa Mesh, BLE, and Wi-Fi.
- Integrated GPS for precise positioning, mapping of sensor data, and responder tracking.



### HARDWIRED CONNECTIVITY AND CHARGING

The TR10 Warden maintains clear separation between power and data interfaces for increased reliability:

- **Charging Interface:** All charging and external power interfacing is conducted via a reinforced external pin connector.
- **Data Interface:** The unit features a USB-C interface utilized for high-speed data transfer. Through a USB-C to Ethernet dongle, the device provides standard internet connectivity and Modbus peer-to-peer communication for remote monitoring and integration with existing networks.



## SCENTROID SOFTWARE ECOSYSTEM

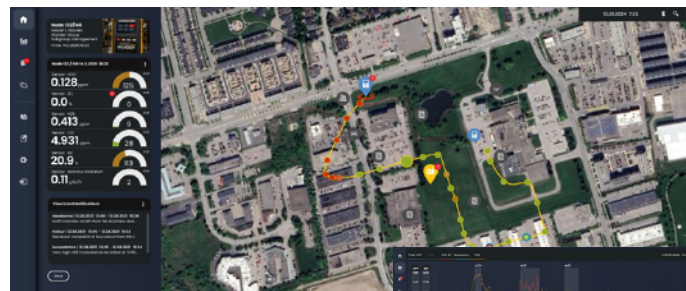
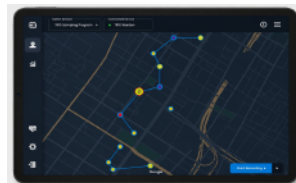
### ON-BOARD INTERFACE

Provides real-time visualization of gas concentrations, radiation levels, and alarm status directly on the device touchscreen, featuring historical trend graphs and sensor diagnostics.



### GROUND STATION GIS

Field tablet software that offers a live geographic overview of device positioning, recorded sampling routes, and the identification of high-risk zones through a GIS-based interface.



### SIMS3 SOFTWARE + ANALYTICS

A comprehensive environmental intelligence platform for advanced data processing and automated reporting.



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