PhotonTec™

Smart Sensing for Safer and Cleaner Tomorrow

Hawk Series Sensors: Non-Contact Multi-Surface Optical Detection for Liquid Hydrocarbons & HABs

Patented CFRS™ Technology: IoT-Ready Monitoring for Leaks, Spills, HABs & Contamination

Hawk Hydrocarbon Sensors deliver continuous, non-contact monitoring and early detection of oil and fuel contamination on water, ground, and solid surfaces. Patented CFRS optical design ensures high sensitivity and reliable detection, helping improve safety and reduce environmental risk across diverse industries.

BlueHawk™ Algae Sensors provide real-time, non-contact monitoring of cyanobacteria (blue-green algae), golden-brown, and other microalgae associated with harmful algal blooms (HABs).

Hawk sensors operate on complex surfaces and turbulent waters. The long detection range (33+ ft/10+ m) allows installation on nearby/distant platforms, enabling non-intrusive, low-maintenance monitoring with minimal disruption. They can also be deployed on drones, vessels, buoys, and vehicles for mobile monitoring.

A pan-tilt mount enables coverage up to 1,600 sq ft (150 m²) from a single point. Rugged, IP68-rated protection, small size, low weight, and low power consumption make Hawks suitable for challenging environments, including battery- or solar-powered applications.

Non-Contact, Non-Intrusive, Biofouling-Free Detection

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Operates on Water, Ground & Solid Surfaces

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High Sensitivity

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Quantification

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Detects a Wide Range of Petroleum Products & HABs/Algae

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Long Detection Range & Large Coverage

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24/7 Operation

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Real-Time Data & Automatic Alerts

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Fixed, Mobile, Pan-Tilt

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IP68-Rated Protection, HazLoc/ATEX Optional

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Standalone or Networked Operation

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Low Maintenance

APPLICATIONS

- Water Systems
- Oil & Gas
- Ports & Harbors
- Power Generation
- General Industry
- Environmental Monitoring

Multispectral Non-Contact Fluorometric Detection

Hawk sensors project ultraviolet (UV) or visible light pulses onto the monitored surface. When this light interacts with certain hydrocarbons in oils and fuels or photosynthetic pigments in algae, it causes them to emit fluorescent light. The sensor measures this fluorescence intensity (higher intensity indicates greater presence); exceeding a user-set threshold triggers an alarm or external device and/or sends a signal via wired/wireless communication. Real-time monitoring data can also be transmitted to SCADA, control systems, and monitoring networks.

Available Hawk Sensor Models


BlueHawk


BlueHawk HazLoc


TinyHawk


TinyHawk HazLoc

Patented CFRS™ Technology

Versatile Detection with UVA/UVB/Vis: BlueHawk supports UVA, UVB, and visible spectral bands, while TinyHawk uses UVA and UVB. UVA & UVB enable reliable detection of light to heavy oils and colored dissolved organic matter (CDOM); visible light is used for measuring chlorophyll, phycocyanin, phycoerythrin, and other pigments in HABs.

Coaxial Fluorometric Remote Sensing (CFRS): Patented CFRS optical design with large apertures provides high signal strength, sensitivity, and tolerance to varying surface distances and ambient conditions. It also enables use in mobile and pan-tilt installations.

Specifications

Parameter	BlueHawk™	TinyHawk™
Optical Design	Coaxial CFRS	Traditional non-coaxial
Light Source	LED with self-diagnostics	LED
Spectral Bands	UVA / UVB / Vis	UVA / UVB
Monitored Surfaces	Calm to turbulent waters, dry & wet ground and solid surfaces	Static dry and wet surfaces, ground, calm & level waters
Detectable Hydrocarbons	Light to heavy refined oils and fuels, crude oil, PW, others	Light to heavy refined oils and fuels, crude, PW, others
Detectable HABs, DOM	FW/M cyanobacteria, golden, other microalgae, CDOM	N/A
Sensitivity	Sub-µm/sub-ppm, adjustable	Sub-µm/sub-ppm, adjustable
Detection Distance	0.7 to 33+ ft (0.2 to 10+ m)	0.7 to 10.0 ft (0.2 to 3.0 m)
Monitoring Coverage	Up to 1,600 sq ft (150 m²) PT	Ø10” (0.26 m) @ 10 ft (3 m)
Detection Angle	±45° from surface normal	±45° from surface normal
Pulse Rate	Up to 10 Hz, adjustable	Up to 10 Hz, adjustable
Protection (standard/hazloc)	IP68 / Class I/II/III ATEX	IP68 / Class I/II/III ATEX
Size (standard enclosure)	Ø4” × 9.4” (Ø10 cm × 24 cm)	Ø4” × 3.5” (Ø10 cm × 9 cm)
Power	10–36 VDC, 2 W	12–35 VDC, 1.5 W
Interface & Communication	RS-485 (Modbus RTU), USB; 4-20 mA; SPDT relay	RS-485 (Modbus RTU), USB; 4-20 mA / SPDT relay

Unique Features

UVA/UVB/Vis Detection for Oils, Fuels & HABs

Detection Range Over 33 ft (10 m)

Coverage Up to 1,600 sq ft (150 m²)

High Tolerance for Varying Surface Distances

Wide Detection Angle & High Pulse Rate for Complex Surfaces & Dynamic Waters

IP68-Rated Protection

Fixed, Mobile, Pan-Tilt

Compact, Lightweight, Low Power Use

Patented CFRS Optics with Self-Diagnostics

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