



THE FIRE KNIGHT

THE SENTINEL

**Welcome to The Fire Knight
Your Trusted Fire Protection Company**

Your safety is our priority

**ADVANCED
FIRE SUPPRESSION**





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ADVANCED VEHICLE
FIRE SUPPRESSION

BY THE FIRE KNIGHT



**Compact.
Refillable.
Designed for
real-world
vehicles.**

Introduction

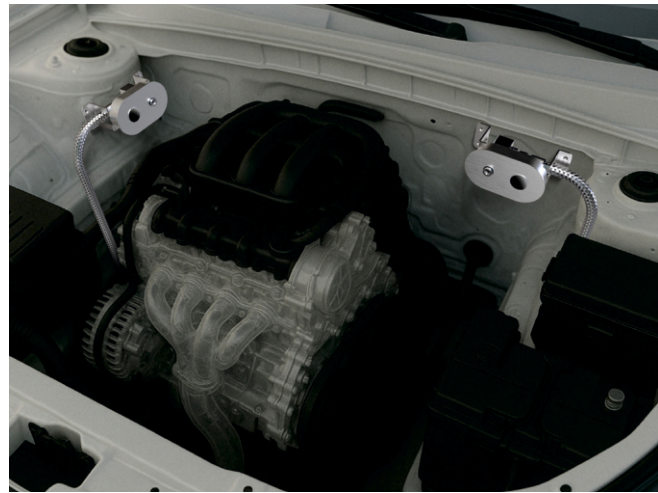
The Sentinel is a compact, high-performance fire suppression system designed to safeguard vehicles in the most demanding environments. Whether in race cars, passenger cars, electric vehicles, public transport, emergency vehicles, heavy machinery, defence fleets, or marine craft — Sentinel delivers rapid, targeted protection without compromising space or performance.



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Key Features

- ✓ Compact modules: Ø150 × 98 mm (with brackets)
- ✓ Refillable stainless steel cylinder: 880 × 169 mm, 7.29 L capacity
- ✓ Multi-zone protection: Up to four independent sensor modules
- ✓ Flexible logic modes: Race Mode (all modules discharge) or Normal Mode (only triggered modules discharge)
- ✓ Refined nozzle coverage: Each nozzle provides a 1.5–2.0 m spray radius in open compartments (≥0.9 m standoff) and 0.8–1.0 m in confined engine bays or cabins (0.4–0.6 m standoff). Coverage may vary with installation angle and compartment geometry.
- ✓ Housing options: PEEK composite (standard) or stainless steel (optional)
- ✓ No chassis drilling: Supplied brackets and vibration-damping mounts
- ✓ Cylinder is refillable and does not require re-certification after refill.



How It Works

- **Smart Detection:** Each module houses its own sensors — IR flame detection and rate-of-rise temperature. Includes a built-in PCB enclosure temperature sensor — triggers a failsafe alarm if internal temperature exceeds 60 °C.
- **Automatic Response:** Each module discharges suppression fluid locally when a fire is detected.
- **Manual Activation:** Dashboard button for road use, dual FIA-style buttons for race applications (internal + external).
- **Race vs Normal Mode:** Choose between full simultaneous discharge or selective activation to extend protection.

Electronics & Software



Electronics and sensor modules are designed to IP67 standard – sealed against dust and capable of withstanding water ingress, washdown, and marine environments.



Connectivity: GSM/4G with SIM card + antenna. Supports multiple Sentinel systems per account. Each system can be linked to a vehicle registration number or ID.



Fleet management: Multiple Sentinel systems per account, each assigned to a vehicle registration or ID

Multiple Sentinel systems can be linked and monitored under a single account.



End-cap enclosure: Houses PCB, SIM, antenna, and backup battery



Alerts: Instant SMS, email, and app notifications for fire events, discharges, and low battery



Integration: API, OTA firmware updates, optional back-to-base monitoring

Applications

- ✓ Race cars
- ✓ Passenger vehicles
- ✓ Electric vehicles
(engine, cabin, battery zones)
- ✓ Public transport
(buses, coaches, ferries)
- ✓ Emergency vehicles
- ✓ Trucks and logistics fleets
- ✓ RVs and campervans
- ✓ Heavy machinery and mining equipment
- ✓ Defence platforms
- ✓ Marine craft
(ferries, water taxis, work boats, yachts)



Compliance & Materials

Pressure vessel standards: ASME BPVC VIII-1, EN 13445, PD 5500, CE, tested by NATA-accredited labs (ISO/IEC 17025)

Electronics standards: IEC 62368-1 (AS/NZS, EN, UL, CSA deviations), ISO 26262, ECE R10

Materials: Cylinder SS316; modules PEEK (standard) or stainless steel (optional); FKM O-rings; SS316 fasteners (passivated/electropolished); sapphire glass sensor window

Operating Pressure: 12–15 bar.



Maintenance & Service

- ✓ Cylinder refillable with approved water-based suppression fluid — no re-certification required after refill
- ✓ Backup battery: Replace every 12 months (low-battery alert provided)
- ✓ Annual inspection recommended for battery and cylinder pressure
- ✓ Automated service reminders built into the Sentinel software platform
- ✓ Solenoids should be replaced during each major service (every 2 years).

Disclaimer: All specifications, dimensions, weights, and performance figures are approximate and subject to change without notice. Variations may occur due to manufacturing tolerances, installation conditions, and regional approvals. Always confirm final specifications with The Fire Knight before ordering or installation.



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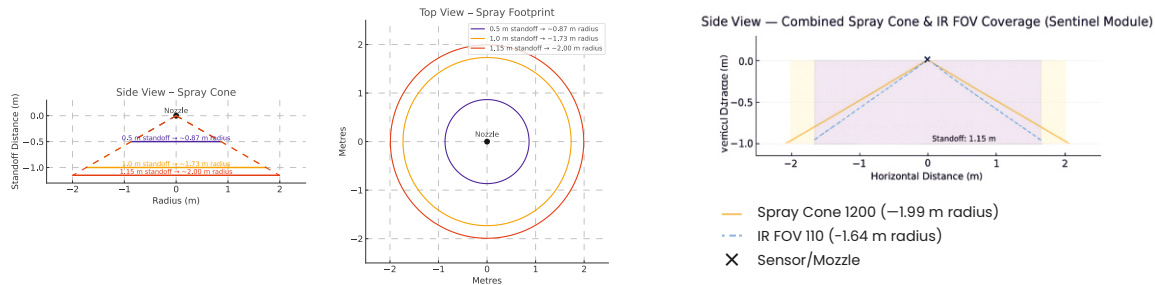
THE FIRE KNIGHT

SENTINEL SERIES

The Sentinel – Technical Specifications

Section	Specification
Product Overview	Compact, refillable fire suppression aid for vehicles: race cars, passenger vehicles, EVs, public transport, emergency vehicles, trucks, RVs, heavy machinery, defence, and marine craft.
Cylinder	880 × 169 mm, 7.29 L, Stainless Steel 316, refillable
Modules	Ø150 × 98 mm (with brackets)
Housing Options	PEEK composite (standard) / Stainless Steel (optional)
Nozzle	SS316, 120° full cone, ½" BSPT
Operating Pressure	12–15 bar
Hydrotest Pressure	20 bar (1.33 × MAWP) → Hydrotest Pressure: 22.5 bar (1.5 × MAWP) Hydrostatic pressure testing performed at 1.5 × MAWP by a NATA-accredited laboratory in accordance with ASME BPVC Section VIII.
Suppression Fluid	Water-based, pressurised with nitrogen (preferred) or clean air
Discharge Duration	Race Mode: 10–15 s (all modules) Normal Mode: 30–40 s (only triggered modules)
Coverage per Nozzle	1.5–2.0 m spray radius in open compartments (≥0.9 m standoff); 0.8–1.0 m spray radius in confined engine bays or cabins (0.4–0.6 m standoff). Coverage may vary with installation angle and compartment geometry.
Flow Rate	~6 LPM @ 12–15 bar (12 mm solenoid orifice)
Hose	12 mm ID, 5 m supplied (extendable to 10 m)
Sensors (per module)	IR flame sensor (sapphire glass), RoR/NTC temperature
Activation	Automatic (sensor-triggered) Manual: dashboard button (road use) Dual FIA buttons (race: internal & external)
Suppression Logic	Race Mode: all modules discharge Normal Mode: only triggered modules discharge
End-Cap Electronics	PCB, SIM slot, antenna, backup battery, module ports
Electronics Protection	IP67 design
PCB Protection	Conformal coated
Ventilation	IP67 ePTFE breather
Connectors	IP67 automotive grade
Connectivity	GSM/4G (SIM + antenna)
Alerts	SMS, email, mobile app (fire, discharge, low battery)
Fleet Management	Multiple Sentinel systems per account

Section	Specification
Vehicle Assignment	Each system can be linked to registration or ID
Integration	API connectivity, OTA firmware updates, optional back-to-base monitoring
Maintenance & Service	Cylinder Refill: Stainless steel, refillable, no re-certification needed after refill. Must use approved water-based fluid. Battery: Replace backup battery every 12 months. System provides low-battery alert. Inspection Schedule: Annual inspections recommended for battery and pressure. Follow fluid manufacturer and local vessel regulations. Service Reminders: Automated alerts for refill, inspection, and battery replacement. Fleet managers track service via Sentinel platform.
Installation Guidelines	Bracket Mounting: Cylinder secured with dual stainless brackets, vibration-damping inserts. No chassis drilling required. Cylinder Placement: - Passenger Vehicles & Race Cars: boot/trunk or behind seats - Trucks & Heavy Machinery: chassis rails, behind cab, or underbody - Buses & Coaches: rear engine compartment or underfloor luggage bay - Marine Craft: engine room or service compartments (hoses up to 10 m) Module Placement: Engine bays, cabins, battery compartments, service areas. Each nozzle 1.5–2 m radius. Hoses 5 m (extendable to 10 m).
Applications	Passenger vehicles, race cars, EVs, public transport, emergency vehicles, trucks, RVs/campervans, heavy machinery, defence vehicles, marine craft.
Pressure Vessel Standards	ASME BPVC VIII-1 EN 13445 PD 5500 NATA Accredited (ISO/IEC 17025) CE – European Safety, Health & Environmental Compliance Pressure vessel tested at 1.5 × MAWP with testing conducted by a NATA-accredited laboratory (ISO/IEC 17025).
Electronics Standards	IEC 62368-1 (AS/NZS, EN, UL, CSA deviations) ECE R10
Materials	Cylinder: SS316 Modules: PEEK / optional SS O-Rings: FKM (Viton) Fasteners: SS316 (passivated/electropolished) Sensor Window: Sapphire glass
Component Operating Range Design Maximum	Cylinder & Wetted Parts –50 °C to +250 °C +300 °C Sensor Module Housing (PEEK) –50 °C to +250 °C +300 °C Sensor Electronics (Internal) –40 °C to +125 °C +150 °C Main PCB & Communications –40 °C to +85 °C
Electronics	Operating –40 °C to +85 °C (higher with high-temp components)
System Advantages	- Multi-zone fire detection & discharge - Flexible logic modes (Race / Normal) - Refillable SS316 cylinder - Compact modules - Global standards alignment - IP67 electronics design - Integrated GSM/4G monitoring - Automated service reminders



The Sentinel module's 120° spray cone and 110° infrared field of view operate in alignment, providing synchronized detection and suppression across a 2.0 m coverage radius.

Images are for illustrative purposes only and may not accurately represent final product configuration, proportions, or field performance. Coverage data is based on controlled laboratory testing; actual results may vary depending on installation height, pressure, and environmental conditions.

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