SFEMS TECHNOLOGIES

"Transforming Fire Safety into **Real-Time Intelligence**"

MONITOR
Real-Time Status

DETECT
Faults & Risks

ALERT
Instant Notifications

PROTECT
People, Assets & Communities

A Safer Nation.
A Smarter Tomorrow.



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المملكة العربية السعودية
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PRODUCT HANDBOOK
Version 1.0 **01**

01 About SFEMS

A Smarter Way to Keep Fire Safety Always Ready

SFEMS TECHNOLOGIES

"Transforming Fire Safety into Real-Time Intelligence"

SFEMS is an innovative IoT-based solution that continuously monitors the status and location of fire extinguishers, providing real-time visibility, early warnings and digital audit trails.



- **Smart Safety**
- **Connected Intelligence**
- **Real-Time Visibility**
- **Compliance Ready**

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02 The Real-World Problem

Many fire extinguishers are found faulty, missing, empty or tampered with when needed the most.

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"Transforming Fire Safety into **Real-Time Intelligence**"



Smart Safety | **Connected Intelligence** | **Real-Time Visibility** | **Compliance Ready**



Unknown status
(faulty, empty or tampered)

It's hard to know if the extinguisher is functional, charged and ready for use.



No real-time location tracking
(especially in large facilities)

Fire extinguishers can be hard to locate during an emergency, especially in large buildings and multi-site facilities.



Manual inspections
are time-consuming and error-prone

Traditional inspection methods are manual, paper-based and prone to human error, leading to missed issues.



No central visibility
across multiple sites

Organizations lack a single platform to monitor the status and location of fire extinguishers across all sites and facilities.

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Missed inspections and faulty extinguishers can lead to serious incidents, loss of life and property damage.

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03 Our Solution – SFEMS

A complete, real-time fire extinguisher monitoring ecosystem with device, connectivity, cloud platform and mobile app.

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"Transforming Fire Safety into **Real-Time Intelligence**"



- Real-time status and location
- Instant alerts for faults
- Easy installation (non-invasive)
- Cloud dashboard and mobile app
- Multi-site, multi-user management
- Audit-ready reports

Smart Safety | **Connected Intelligence** | **Real-Time Visibility** | **Compliance Ready**

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04 How SFEMS Works

Complete visibility of your fire safety assets, anytime, anywhere

SFEMS TECHNOLOGIES
Transforming Fire Safety into **Real-Time Intelligence**



1 SFEMS MINI (Device)



Device monitors pressure, status & environment

2 Data sent via LoRaWAN (Long Range)

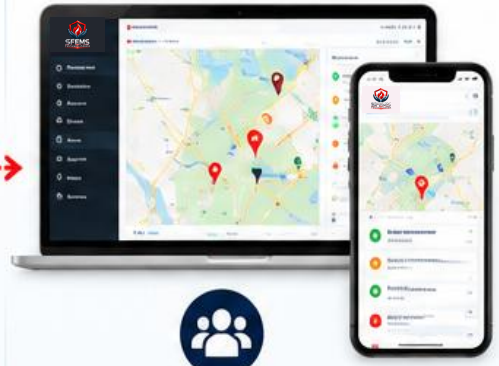


Data sent to gateway via LoRaWAN

3 SFEMS CLOUD Platform

Secure cloud platform

4 Dashboard & Mobile App (Real-Time Access)



Real-time dashboard & mobile app

- **Live Map & Locations**
- **Device Status**
- **Alerts & Notifications**
- **Reports & Analytics**
- **Use & Site Management**

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05 System Architecture

End-to-end architecture for real-time monitoring, alerts and management of fire extinguishers.

SFEMS TECHNOLOGIES

"Transforming Fire Safety into **Real-Time Intelligence**"



1 SFEMS MINI (Device)



- Monitors pressure
- Environment data
- Device status
- Battery level
- Tamper detection

2 LoRaWAN Gateway (Long Range)



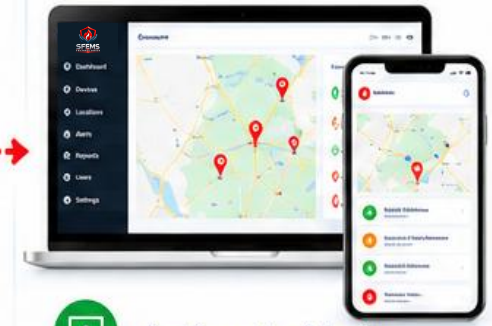
- Receives data from multiple devices
- Secure transmission
- Long range (2–10 km, more with industrial gateways)
- Supports multi-site deployments

3 SFEMS Cloud Platform



- Secure cloud storage
- Data processing & analysis
- Fault detection & alert generation
- Scalable & reliable infrastructure

4 Dashboard & Mobile App (Real-Time Access)



- Real-time status & location
- Instant alerts for faults
- Multi-site, multi-user management
- Audit-ready reports

Smart Safety
Continuous monitoring of fire extinguishers

Connected Intelligence
IoT + LoRaWAN for wide coverage

Real-Time Visibility
Know the status anytime, anywhere

Compliance Ready
Digital records for inspections and audits

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06 SFEMS MINI - Device Overview

Compact, intelligent and reliable monitoring device for fire extinguishers.



Compact and lightweight
Small form factor with robust d

Non-invasive installation
No modification to extinguisher.

Monitors pressure & status
Tracks real-time pressure, tamper and device health.

Built for harsh environments
Reliable operation in high temperature, dust and vibration conditions.

Long battery life (up to 5 years TDB)
Optimized low-power design.

Wireless connectivity (LoRaWAN)
Long range, secure and stable communication.

Fail-safe design
Does not interfere with normal operation of the extinguisher.

- Small Size (Compact)
- Lightweight
- Easy Installation
- Monitors Pressure & Status
- Long Battery Life (up to 5 years TDB)
- LoRaWAN Connectivity
- Rugged & Fail-Safe

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07 Key Features & Benefits

Real-time intelligence for safer buildings, smarter operations and complete fire safety visibility.

SFEMS TECHNOLOGIES

"Transforming Fire Safety into Real-Time Intelligence"



Real-time status & location

Complete visibility of all fire extinguishers anytime, anywhere.

Instant alerts for faults

Immediate notifications for low pressure, tamper or missing devices.

Multi-site & multi-user management

Manage multiple locations, clients and users from a single platform.

Cloud dashboard & mobile app

Easy-to-use web dashboard and mobile app with real-time data, maps and reports.

Automated reports & audit trails

Digital records for inspections, compliance and audits.

Supports all industries and sectors

Ideal for commercial, industrial, government and residential facilities.

Scalable from single site to nationwide

Flexible and scalable solution for small and large deployments.

Improves safety, reduces risk and saves lives

Early detection and timely action to prevent fire incidents.

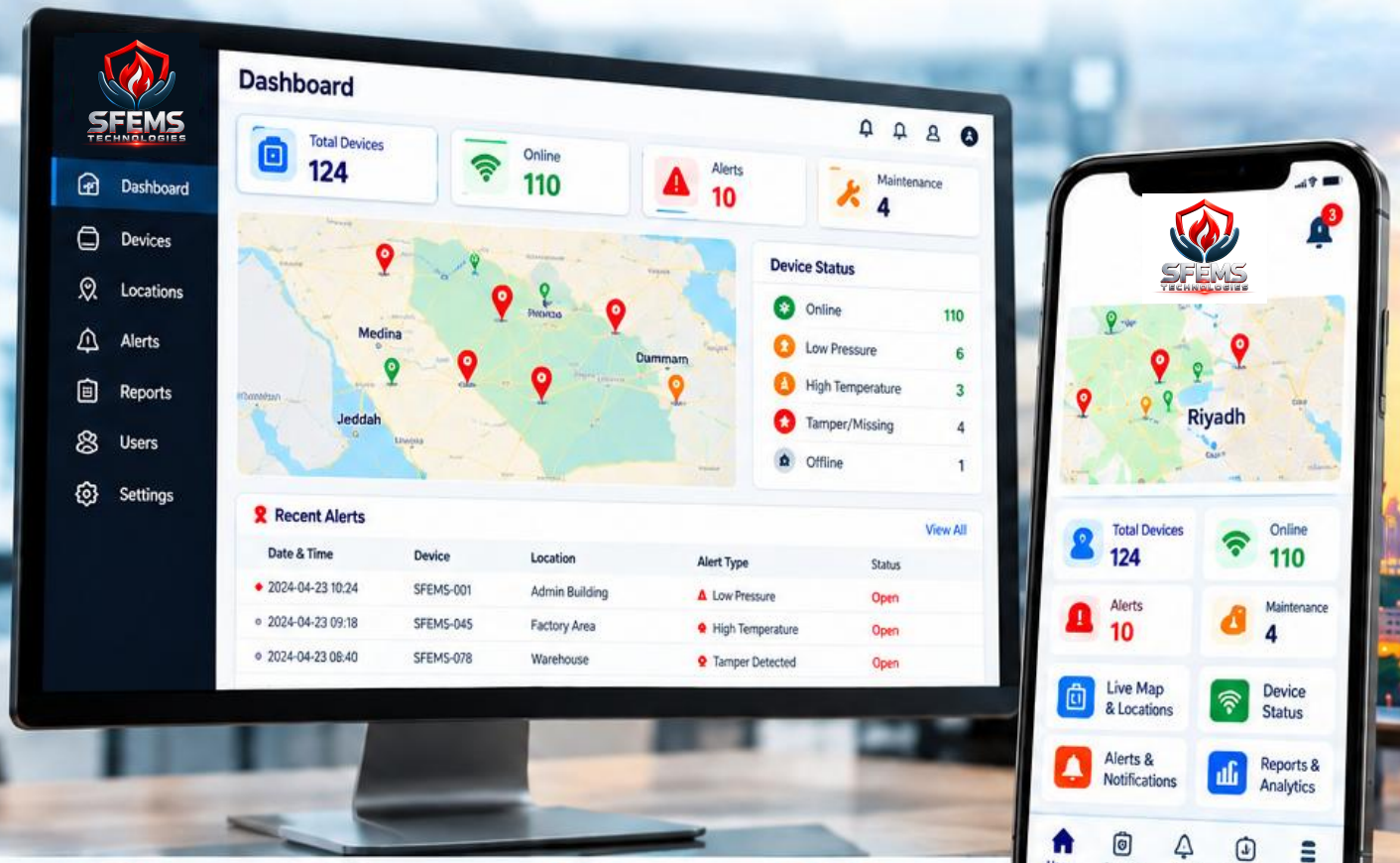
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08 Dashboard & Mobile App

Complete visibility of your fire safety assets anytime, anywhere.



Live Map & Locations
View all fire extinguishers on an interactive map with real-time status and location.

Device Status
Check online, offline and health status of all devices.

Alerts & Notifications
Receive instant alerts for low pressure, high temperature, tampering or missing devices.

Reports & Analytics
Access detailed reports for inspections, compliance and audits.

User & Site Management
Manage multiple sites, users and permissions with ease.

Live Map & Locations | **Device Status** | **Alerts & Notifications** | **Reports & Analytics** | **User & Site Management**

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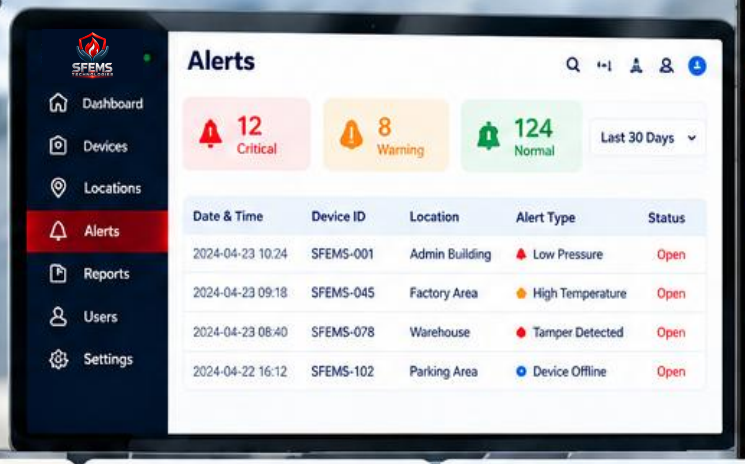
09 Alert Scenarios

Instant notifications to take action before it's too late.

SFEMS TECHNOLOGIES

"Transforming Fire Safety into Real-Time Intelligence"







Live Map & Locations
View all fire extinguishers on an interactive map with real-time status and location.

Device Status
Check online, offline and health status of all devices.

Alerts & Notifications
Receive instant alerts for low pressure, high temperature, tampering or missing devices.

Reports & Analytics
Access detailed reports for inspections, compliance and audits.

01 Low Pressure Alert



Triggered when the extinguisher pressure is below the safe level.

SFEMS now
Low Pressure Alert
SFEMS-001
Admin Building - 1st Floor
Pressure is below safe level.
Take Action

02 High Temperature Alert



Triggered when the device temperature exceeds the safe limit.

SFEMS now
High Temperature Alert
SFEMS-045
Factory Area
Device temperature is above threshold (75°C).
Take Action

03 Tamper / Missing Alert



Triggered when the device is tampered with or removed.

SFEMS now
Tamper Detected
SFEMS-078
Warehouse
Device has been tampered or removed.
Take Action

04 Device Offline Alert



Triggered when the device is offline or not communicating.

SFEMS now
Device Offline
SFEMS-102
Parking Area
No communication from device for more than 1 hour.
Take Action

05 Battery Low Alert



Triggered when the device battery level is low.

SFEMS now
Low Battery Alert
SFEMS-156
Office Building
Battery level is below 20%.
Please replace soon.
Take Action

06 Maintenance Due Alert



Triggered when scheduled inspection or maintenance is due.

SFEMS now
Maintenance Due
SFEMS-201
Retail Store
Scheduled maintenance due in 7 days.
Take Action

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10 Installation Guide

Quick, simple and non-invasive installation near the pressure gauge.

- No Drilling Non-Invasive
- Quick Install (2–5 Minutes)
- Secure Fit Reliable
- Works on Most Fire Extinguishers



1 Identify Installation Location

Locate the mounting area near the pressure gauge on the fire extinguisher.



2 Clean the Surface

Wipe the mounting area to remove dust, oil or moisture for better grip.



3 Attach the Mounting Bracket

Fix the bracket around the extinguisher valve/neck near the pressure gauge.



4 Install the SFEMS Device

Attach the SFEMS device to the bracket and secure it firmly.



5 Check Device Position

Ensure the device does not obstruct the gauge, hose or operation handle.



6 Final Installed View

SFEMS device installed and ready for operation.

7 Installation on Different Models

Compatible with most portable fire extinguishers (Dry Powder, CO_2, Foam, Water etc.).



Dry Powder Type



CO_2 Type



Foam Type

8 Installation Checklist

- [x] Mounting area cleaned
- [x] Bracket fixed securely
- [x] Device attached properly
- [x] Pressure gauge is clearly visible
- [x] Handle and hose are free
- [x] Device is stable (no movement)
- [x] Indicator LED is ON
- [x] Device appears online in dashboard

Important Notes

- No drilling or permanent modifications.
- Does not interfere with extinguisher operation.
- Ensure proper clearance from heat sources.
- Suitable for indoor and outdoor environments.
- Regularly check device during maintenance rounds.

11 Use Cases – Multiple Industries

Deployed across various industries to ensure continuous fire safety monitoring and compliance.





Oil & Gas Plants & Terminals

Critical infrastructure with high risk environments.



Manufacturing Facilities

Ensure safety across production lines and heavy machinery areas.



Commercial Buildings Offices & Malls

Continuous monitoring for occupant safety and compliance.



Healthcare Hospitals & Clinics

Protect patients, staff and critical medical equipment.



Education Schools & Universities

Safe learning environments for students and staff.



Government Facilities

Compliance and safety for public buildings.



Transportation Airports & Stations

High-traffic areas with critical safety requirements.



Warehouses & Logistics Storage & Distribution

Protect inventory, equipment and personnel across large areas.

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12 Technical Specifications

Detailed specifications for SFEMS MINI device.

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Compact Size
Small form factor with robust design.

Lightweight
Easy to install on any extinguisher.

Non-invasive
No modification to extinguisher.

Rugged Design
Built for harsh environments.

Long Battery Life
Up to 5 years (TDB based on usage).

Wireless Connectivity
LoRaWAN for long range and stable communication.

General Specifications

Product Name	SFEMS MINI
Model	SFEMS-M01
Dimensions (L × W × H)	50 mm × 30 mm × 20 mm (Approx.)
Weight	~ 40 grams (TBD)
Mounting	Clamp / Bracket (Non-invasive)
Enclosure Material	UV resistant, fire-retardant, industrial grade
Operating Temperature	-20°C to +85°C
Storage Temperature	-40°C to +85°C
Ingress Protection	IP65 (Dust & Water Resistant)
Installation Time	< 5 minutes

Electrical Specifications

Power Source	Internal Battery (Non-rechargeable)
Battery Type	Li-$SOCl_2$ (Industrial Grade)
Battery Life	Up to 5 years (TDB)
Operating Voltage	3.0 - 3.6 V DC
Average Current	< 50 µA (Sleep Mode)
Peak Current	< 120 mA (Transmission)
Low Battery Alert	Yes (via LoRaWAN)
Power Management	Ultra low power design

Sensing Specifications

Pressure Detection	Electronic Pressure Sensor (Non-invasive clamp type)
Measurement Range	0 – 25 bar (Typical extinguishers)
Accuracy	±0.5 bar (TBD)
Temperature Sensor	-20°C to +85°C
Tamper Detection	Yes (Device removal/tilt)
Device Health Monitoring	Battery, Temperature, Communication status

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13 Safety & Reliability

Non-invasive, durable and intelligent design for continuous monitoring in any environment.



Non-invasive and does not interfere with extinguisher operation

Quick and easy installation without modifying the extinguisher.

All-weather design

Built to withstand harsh and outdoor environments (heat, dust, humidity).

Reliable wireless connectivity (LoRaWAN)

Long range, low power and stable communication.

Built for harsh and outdoor environments

Rugged, industrial-grade design with UV, heat and corrosion resistance.

Proactively aligned with Saudi Vision 2030 for safer communities

Supports smart cities, industrial safety and national infrastructure goals.



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14 Audit & Compliance

Digital records for inspections, status and actions.



Digital inspection logs
Complete digital records of all inspections with date, time, status and photos.

Device status history
Track historical status, alerts and maintenance activities.

Fault and alert records
Maintain records of all detected faults, alerts and corrective actions.

Supports regulatory compliance
Helps meet local and international fire safety regulations (PDF/Excel reports).

Supports mandatory compliance
Assists with audits, inspections and statutory requirements.

Multi-site and multi-client management
Manage compliance for multiple locations, clients and facilities from a single platform.

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15 Why Choose SFEMS?

Innovative, reliable and scalable fire safety solution.

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"Transforming Fire Safety into "Real-Time Intelligence"



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A Smarter Tomorrow.

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Innovative and reliable technology
Designed for real-world fire safety needs.

Designed for real world conditions
Works reliably in indoor, harsh and outdoor environments.

Non-invasive and easy installation
No modification to existing fire extinguisher.

Improves safety, reduces risk and saves lives
Early detection helps prevent fire incidents.

Supports regulatory compliance and critical infrastructure
Helps meet safety standards and audit requirements.

Scalable for single site or multi-site deployments
Suitable for small, medium and large organizations.

Supports businesses, government and critical infrastructure
Ideal for commercial, industrial, healthcare, education and public sectors.

Cost-effective and high return on investment
Reduces manual inspections and operational costs.