FIBER OPTIC- PERIMETER INTRUSION DETECTION SYSTEM [FOPIDS]

Fiber Optic Sensing Solutions Private Limited

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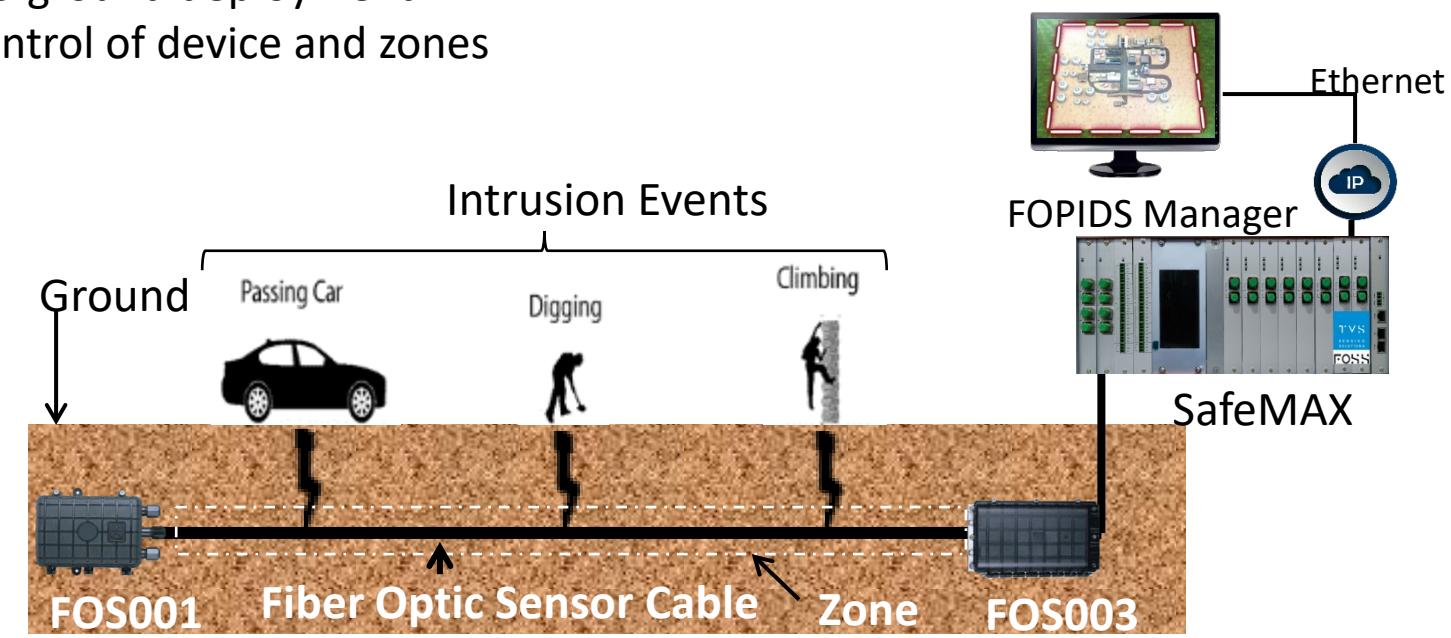
Fiber Optic- Perimeter Intrusion Detection System [FOPIDS]

FOPIDS system is fiber optic intrusion detection sensor system developed for the advanced perimeter security. It has following salient features :

- Third Party Intrusion Detection
- Perimeter Security
- Passive Sensor-OFC
- Vibration Sensor
- Zone Based System
- Real Time Alert and Warning
- Over ground and Underground deployment
- Intelligent software control of device and zones



Features & Advantages

1. Hardware / hardwired Zones :

In hardware zone application, a perimeter is segregated into different detection zones. Zone size can be varied (e.g. 250 mtrs, 500 mtrs, 1000 mtrs etc) depending on the site conditions.

2. Plug & Play Installation :

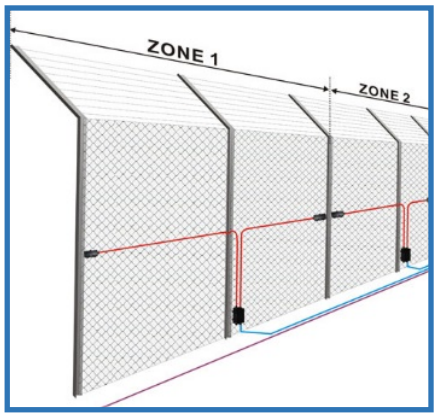
The plug and play design with FC connectors facilitates swifter installation by using only simple hand tools.

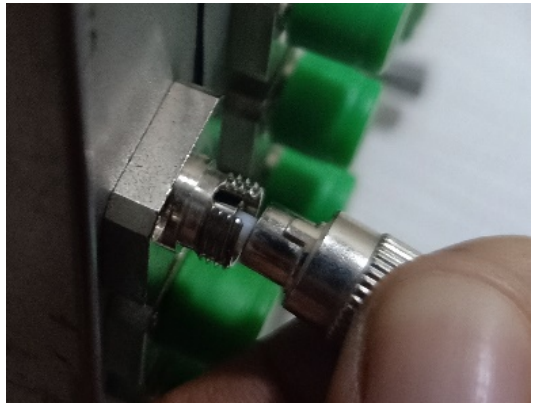
3. Hazard free products/ solution :

Full passive components design that require no outdoor processors and electrical power to the outdoor components. System is immune to electromagnetic interference (EMI), radio frequency interference (RFI).

4. Easy maintenance :

After the system installation, less or no maintenance is required to remain optimal performance.

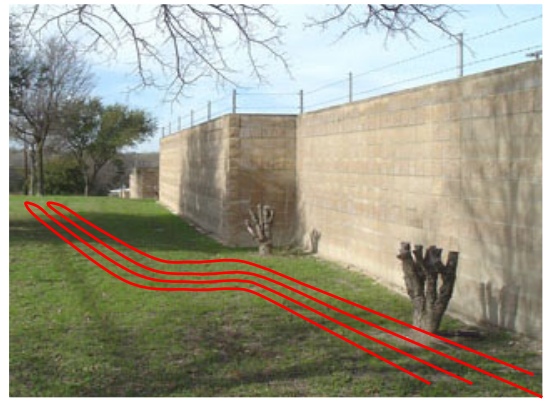




No need

Features & Advantages

5. Invisibility(underground)



When buried underground or installed on wall-top with gravels covering on it, the sensing fiber is completely invisible, thus leaving landscapes unchanged. This prevents tampering and intruder by-pass of the detection area.

6. Intelligent Identification Algorithm

The system with built-in Intelligent Identification Algorithm can reduce the false/nuisance alarm to the lowest level by differentiating actual intrusions from global noises (rain, snow, wind, hail storms and small animals).

7. Integrate with Camera Surveillance

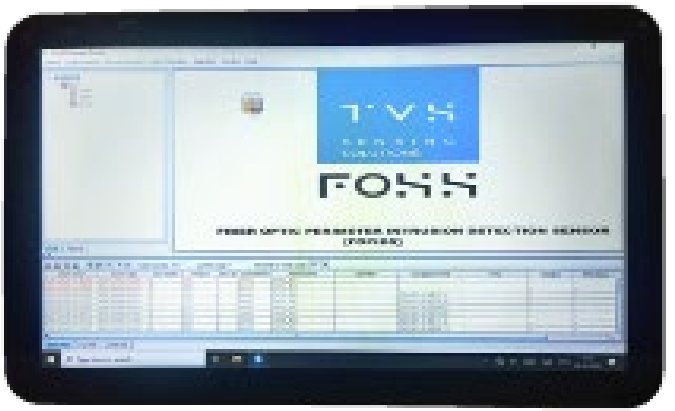
Inspectors can remotely monitor their premise and double confirm if it is a genuine intrusion prior to alerting guards. CCTV and thermal camera integration using TCP/IP or dry contacts available for each zone is possible

Hardware Classification:

Two Product variants :

: **SafeFENCE** (2 Zone hand held device)

: **SafeMAX** (16 zones rack mount design)

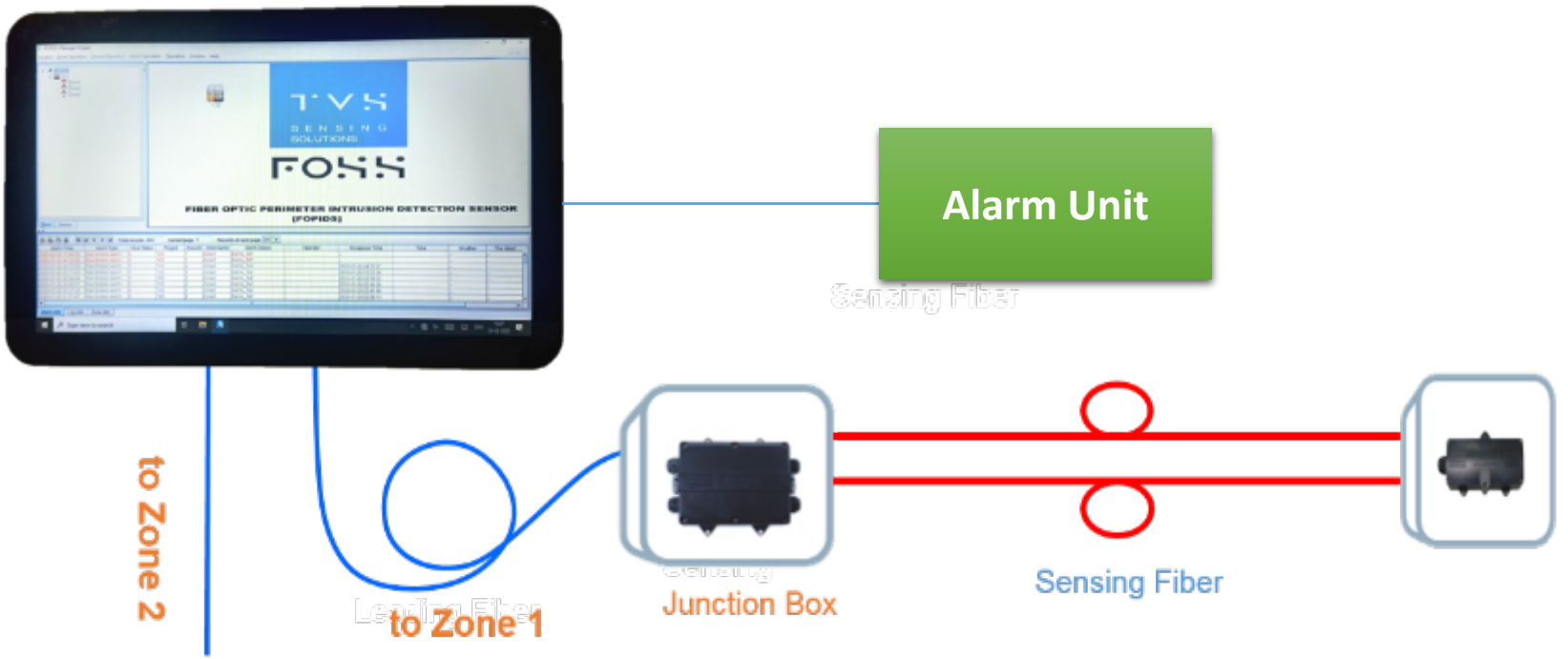


safeFENCE™

safeMAX™

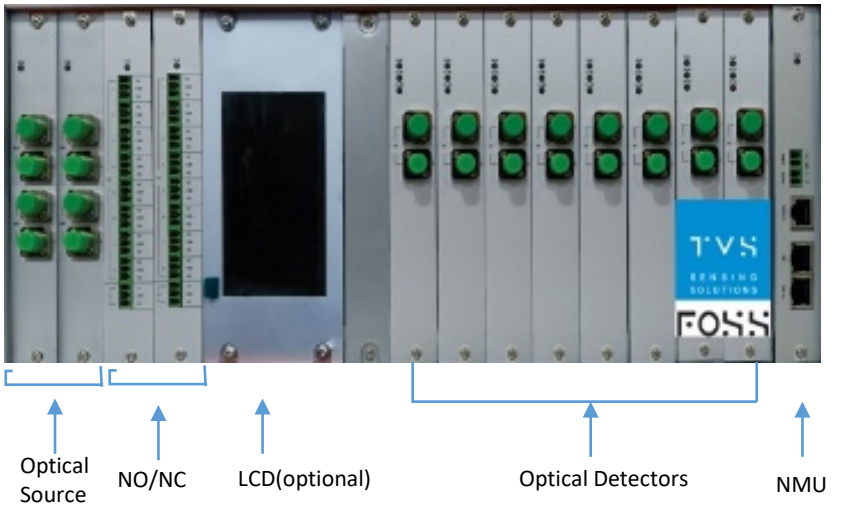
safeFENCE

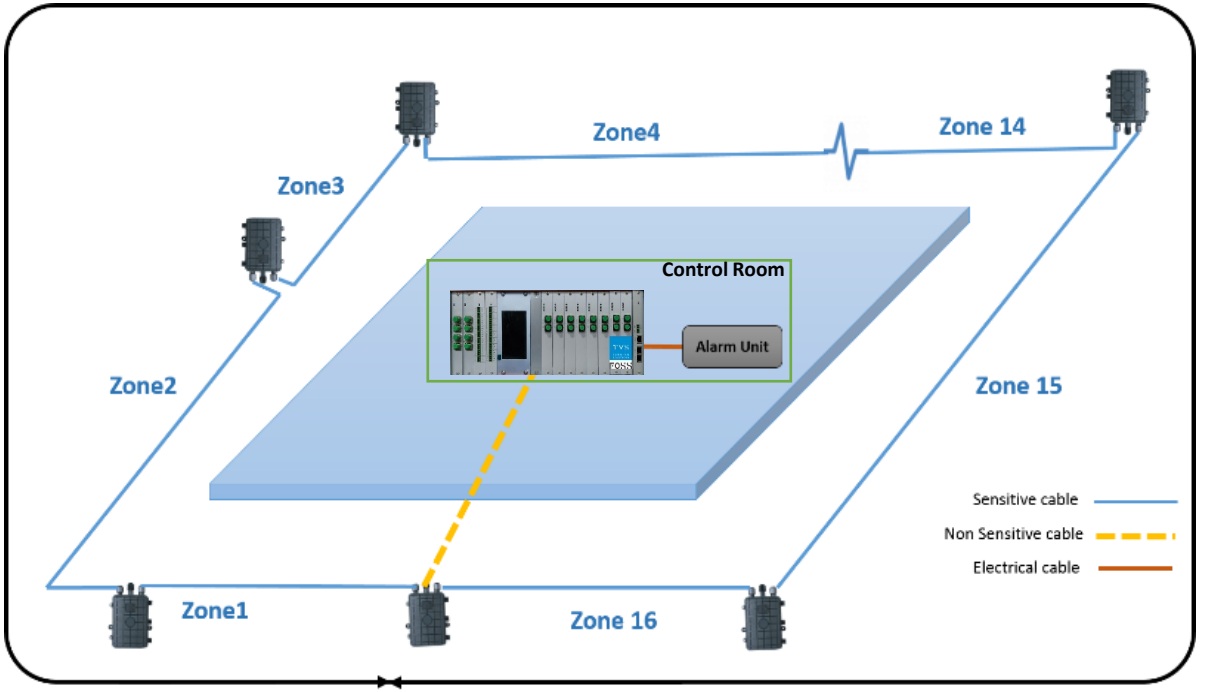
- Two zone solution
- Zone size can be varied (e.g. 250, 500, 750, 1000 and 2000 mtrs)
- Embedded touch screen as HMI/ User Interface
- Standalone unit
- Suitable for small scale applications and indoor facilities



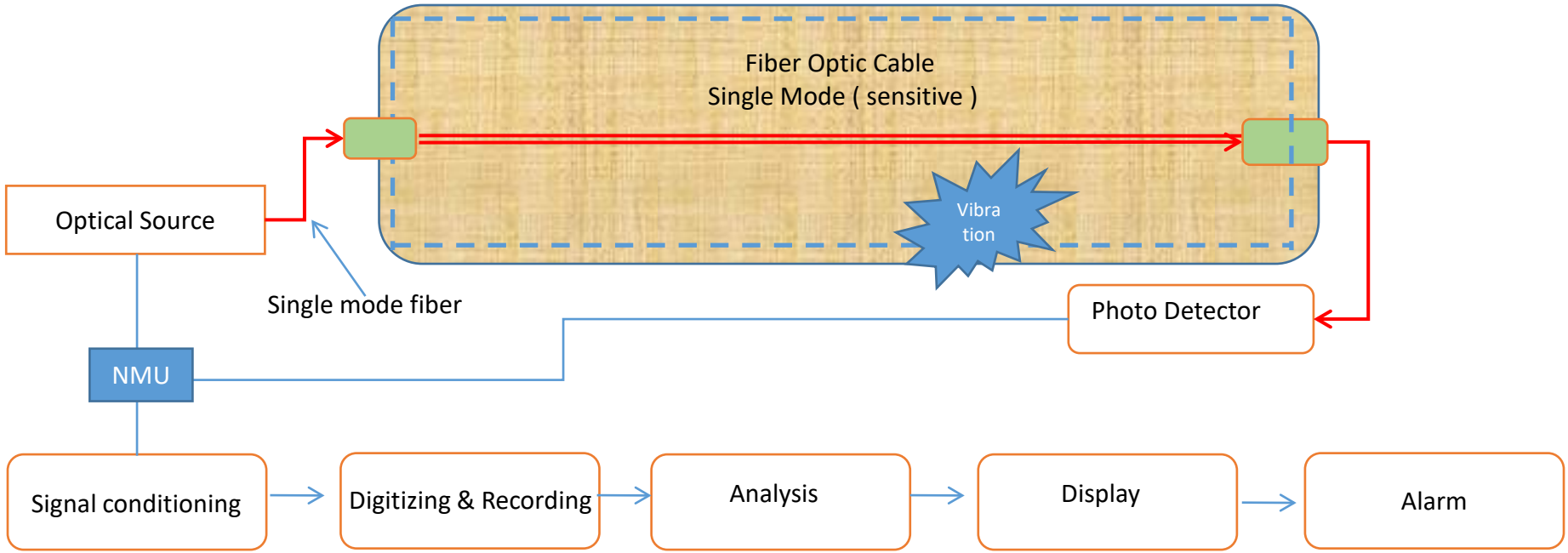
safeMAX

- 19 inch 4U rack mountable
- Optical connectors: FC/APC
- 2,4 ,8 to 16 zones
- Variable zone sizes (e.g. 250 , 500, 750, 1000, 2000 mtrs etc)
- Multiple Device cascading option to increase length
- Dry contact output zone wise(NO/NC)
- TCP/IP interface

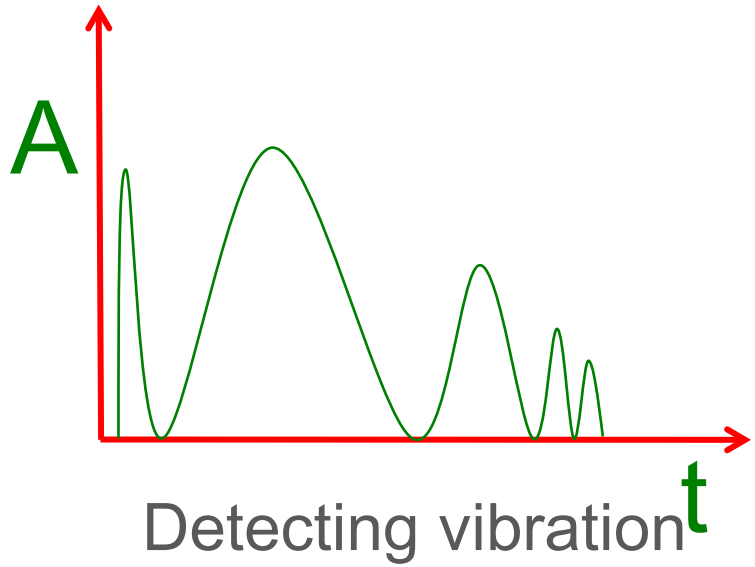




Intrusion Detection schematic



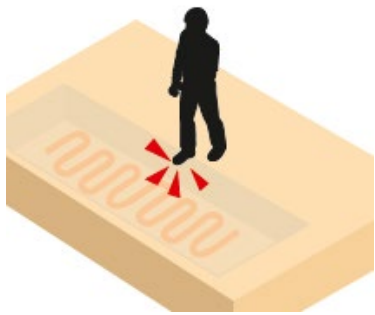
- **Detecting vibration intensity**
- **Detecting vibration frequency**
- **Detecting vibration times**
- **Learning environment data**



System eliminates interference and improves the accuracy of alarm by analysis of the intensity, frequency, times, etc.,

Intrusion Behaviors

Over ground Intrusion events detected:	Underground Intrusion events detected:
Climbing the fence	Digging and tunneling activities
Wall Digging/drilling	Running
Tunnel beneath the fence/Ladder jump	Fast walking
Cutting the Fiber	Vehicle passing
Cutting the fence/wall	Tree cutting



Auto adjust to weather conditions
Wind,snowing,lightning,raining

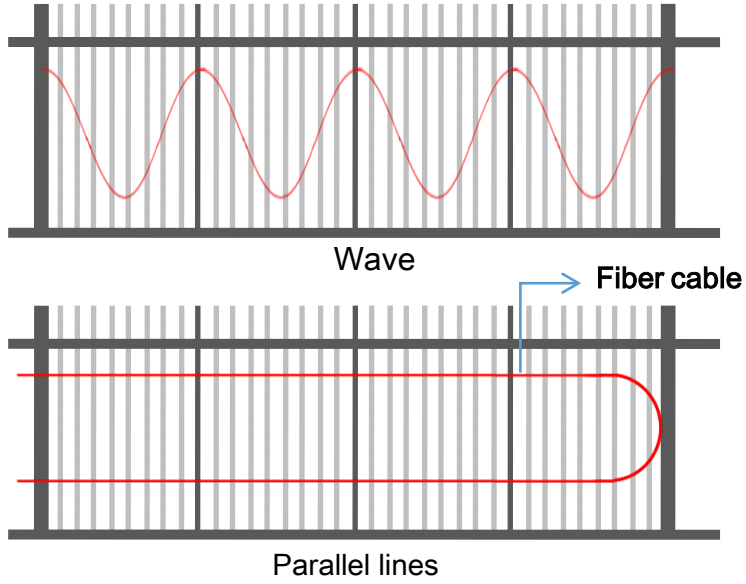
Advantages

- Optical signal as detection signal
- Immune to electromagnetic interference, lightning and electronic surge.
- Harmless to human being and animals
- FOPIDS 24x7 continuous working for 365 days
- Needs common single mode optical fiber cable
- Easy to deploy: on the wire net, Under the ground, Inside or on the wall etc
- Auto adjust to the environment
- Fast response for event
- Easy to install and use

Deployment

1. Metal Wire Net (Iron Fence Included)

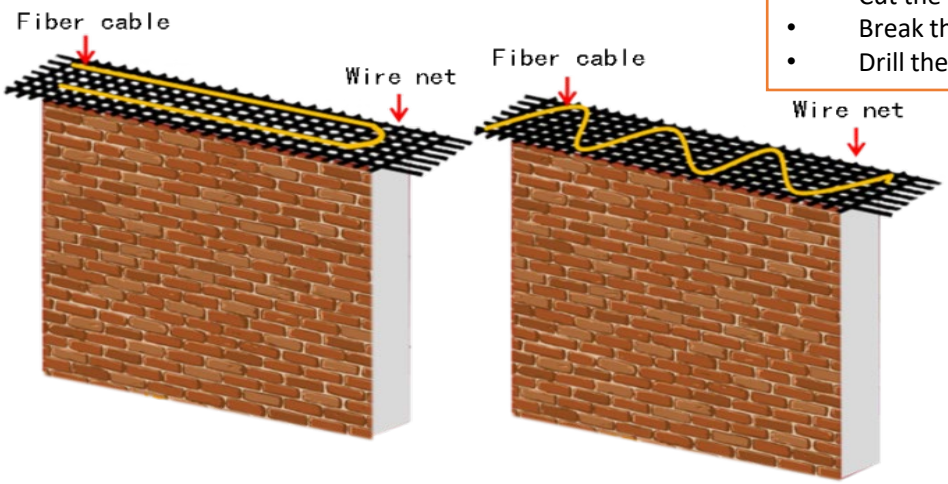
- Climb over the net
- Put a ladder upon the net
- Kick the net
- Cut the net
- Cut the fiber
- Break the host and terminator



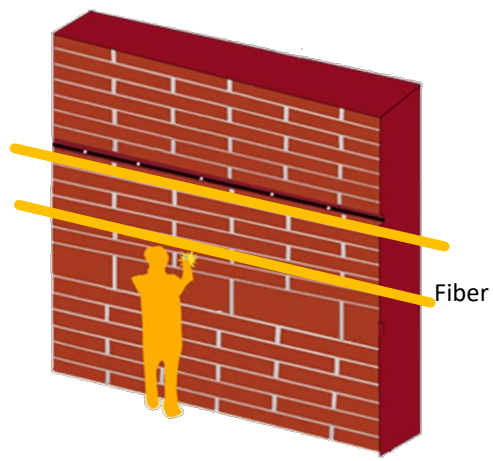
Deployment Patterns of OFC

Wire net covering the top of wall

- Climb over the wall
- Put a ladder upon the wire net
- Cut the net
- Cut the fiber
- Break the host and terminator.
- Drill the wall



On/inside the wall

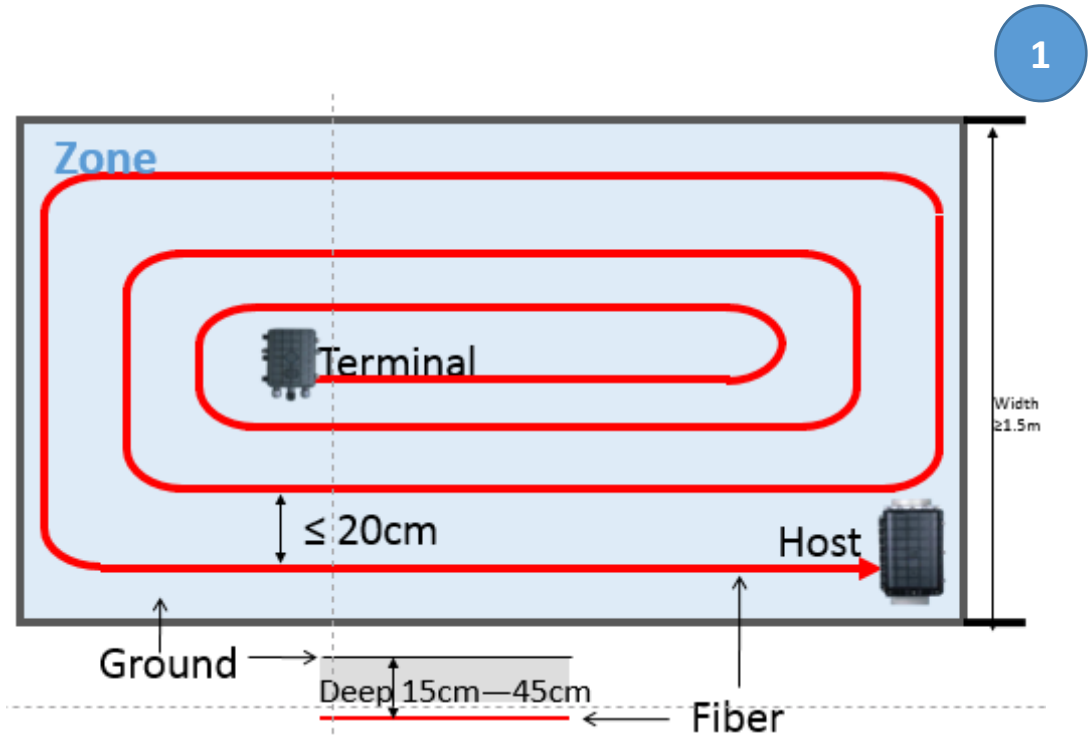


Underground Deployment

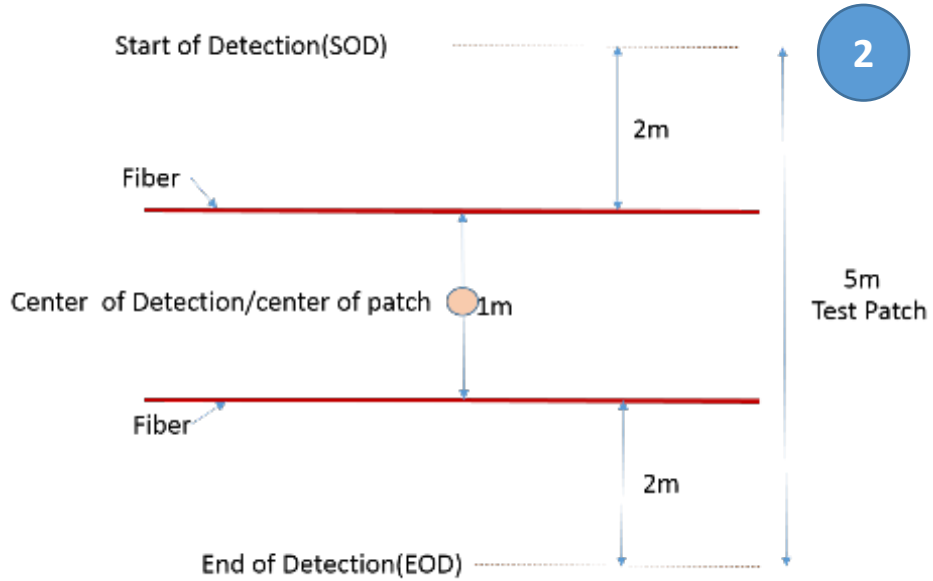
Underground deployment can be:

- Loop
- Single Line/double line

Laying fiber cable underground(common soil, sand, gravel and lawn).



- Digging
- Tunneling
- Vehicle movement
- Mechanical excavation



CONSTITUENTS OF SYSTEM

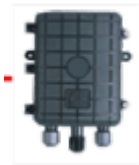
Mandatory

System hosts


- SafeFENCE supporting 2 detection zones
- SafeMAX supporting 16 detection zones

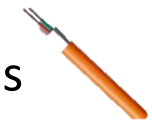
Terminators

- Splitters
- Couplers



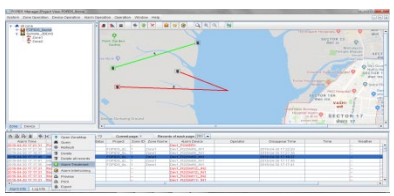
Optical fiber cables

- single mode optical fiber cables



Management software

- FOPIDS Planner: Tuning Software
- FOPIDS Manager : Management software

Optional (may be bought by SI)

- **Alarm host**

  Joint-action system
- **SMS text message module**

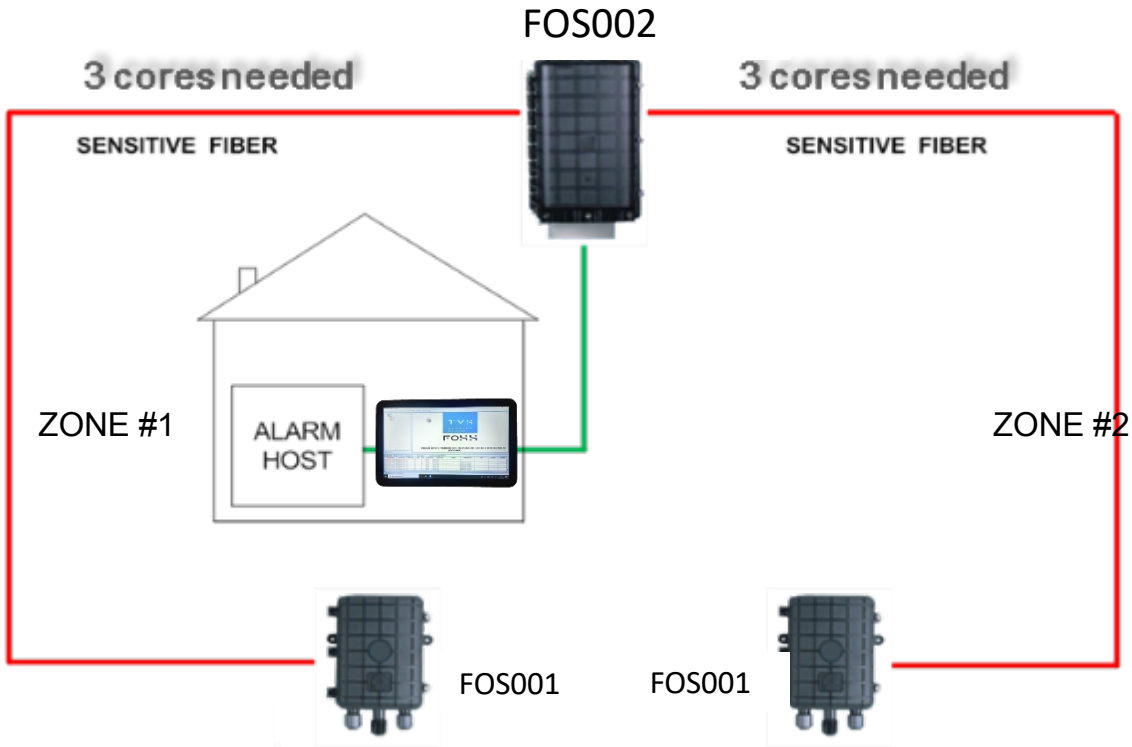
  Joint-action system
- **Camera and monitor**

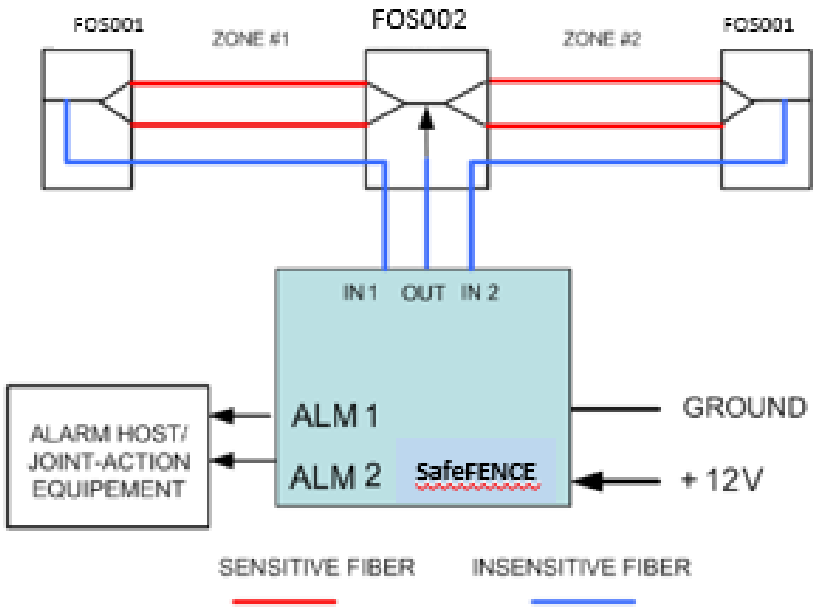
  Joint-action system
- **ODF**

  Optical Distribution Frame
- **Battery system**

  Power supply backup system

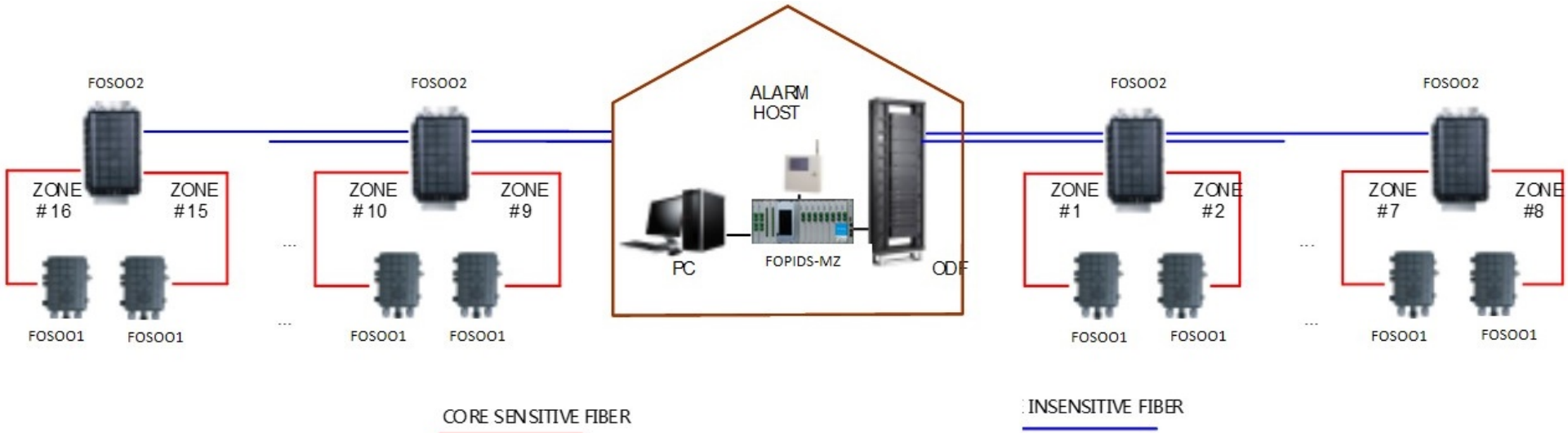
SafeFENCE connection Layout

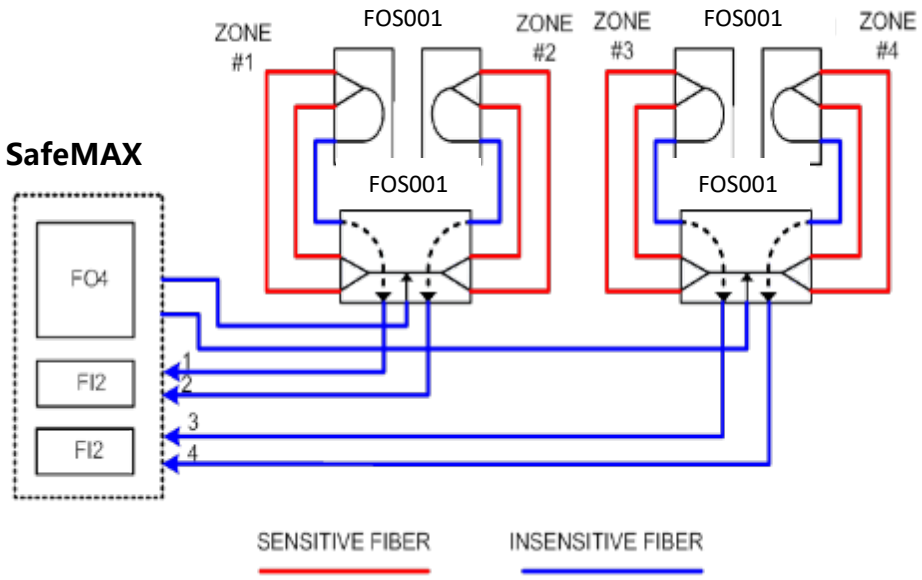




Fiber cable connections

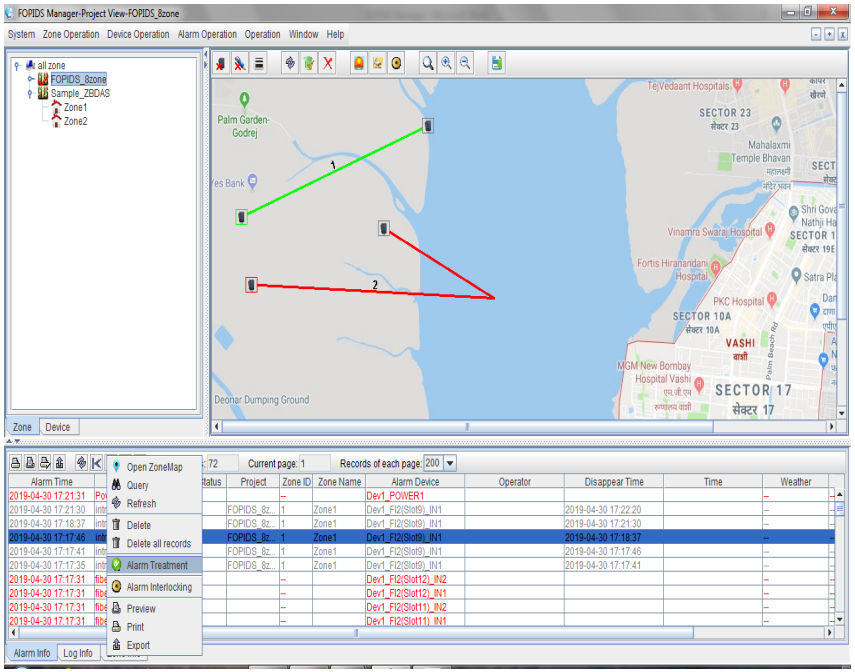
SafeMAX Connection Layout





Fiber cable connections

FOPIDS Manager :Centralized Alarm Management Software – User Interface



- Multiple device management
- Device cascading facility

FOPIDS Manager

The quantity of devices that can be managed by FOPIDSManager depends on the quantity of IP address.

FOPIDSManager can manage SafeFence and SafeMAX through IP net.

Install detection area

Online detection

Map position

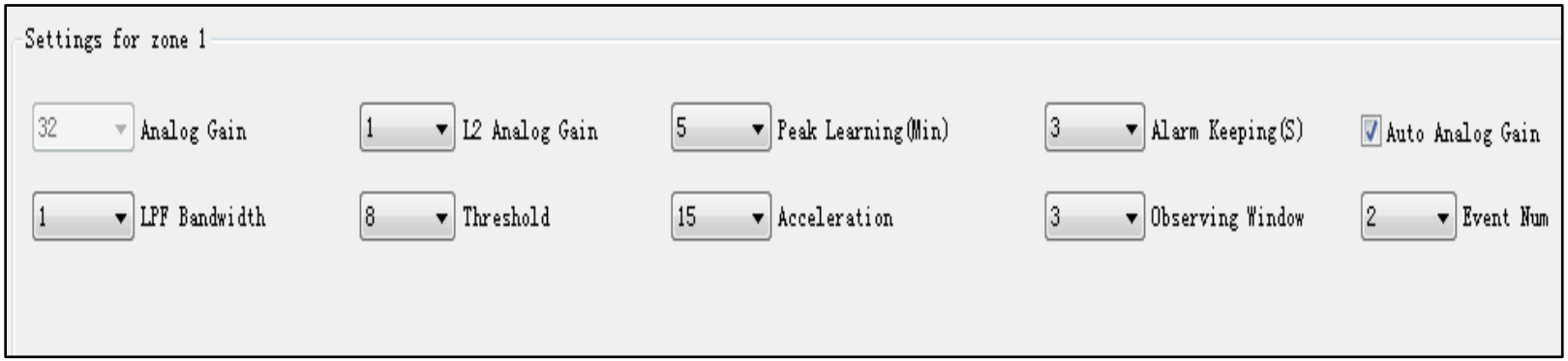
Alarm record

Alarm Joint-Action management

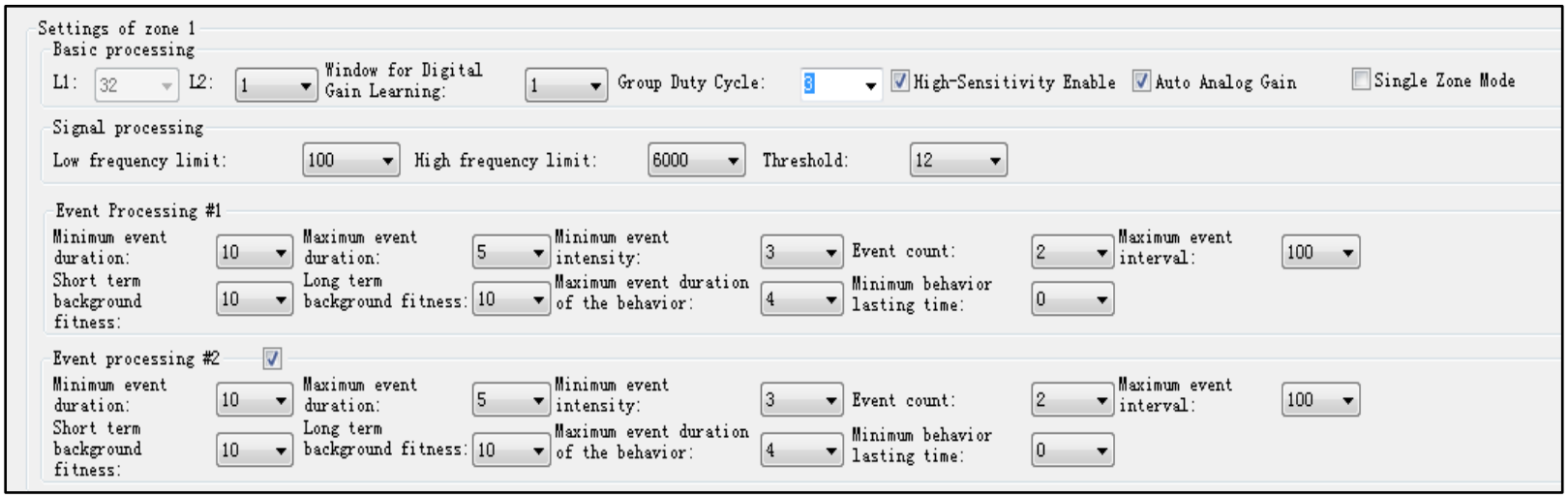
Intrusion analysis

FOPIDS Planner

- Device parameter controlled through software to reduce false alarms.
- Filter and threshold setting according to deployment scenario can be done to reduce false alarm
- The parameter setting software for overground and underground systems help control false alarm



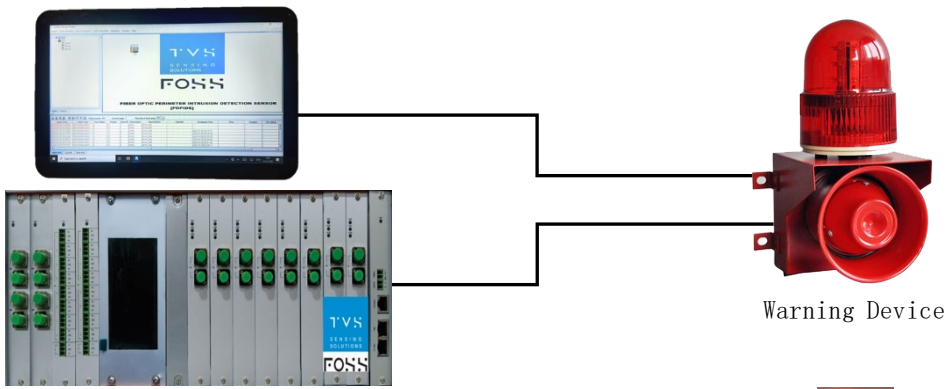
Underground



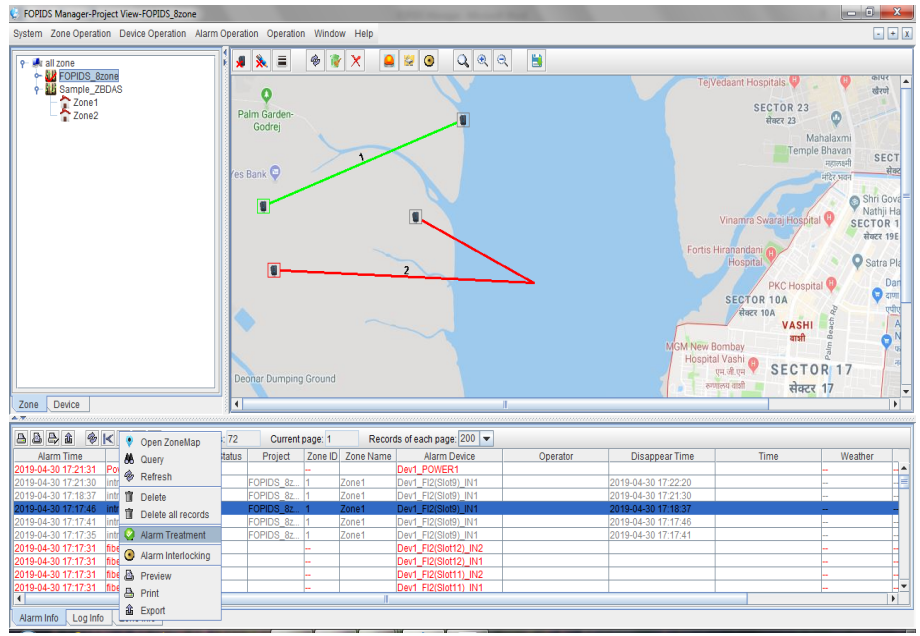
Overground

HMI/ User Interface

- Vibration/ Intrusion is detected and alerted through alarming methods like
  - Buzzer
  - LED
  - Zone Drawing in FOPIDS viewer



Warning Device



Manual Alarm acknowledgment card →

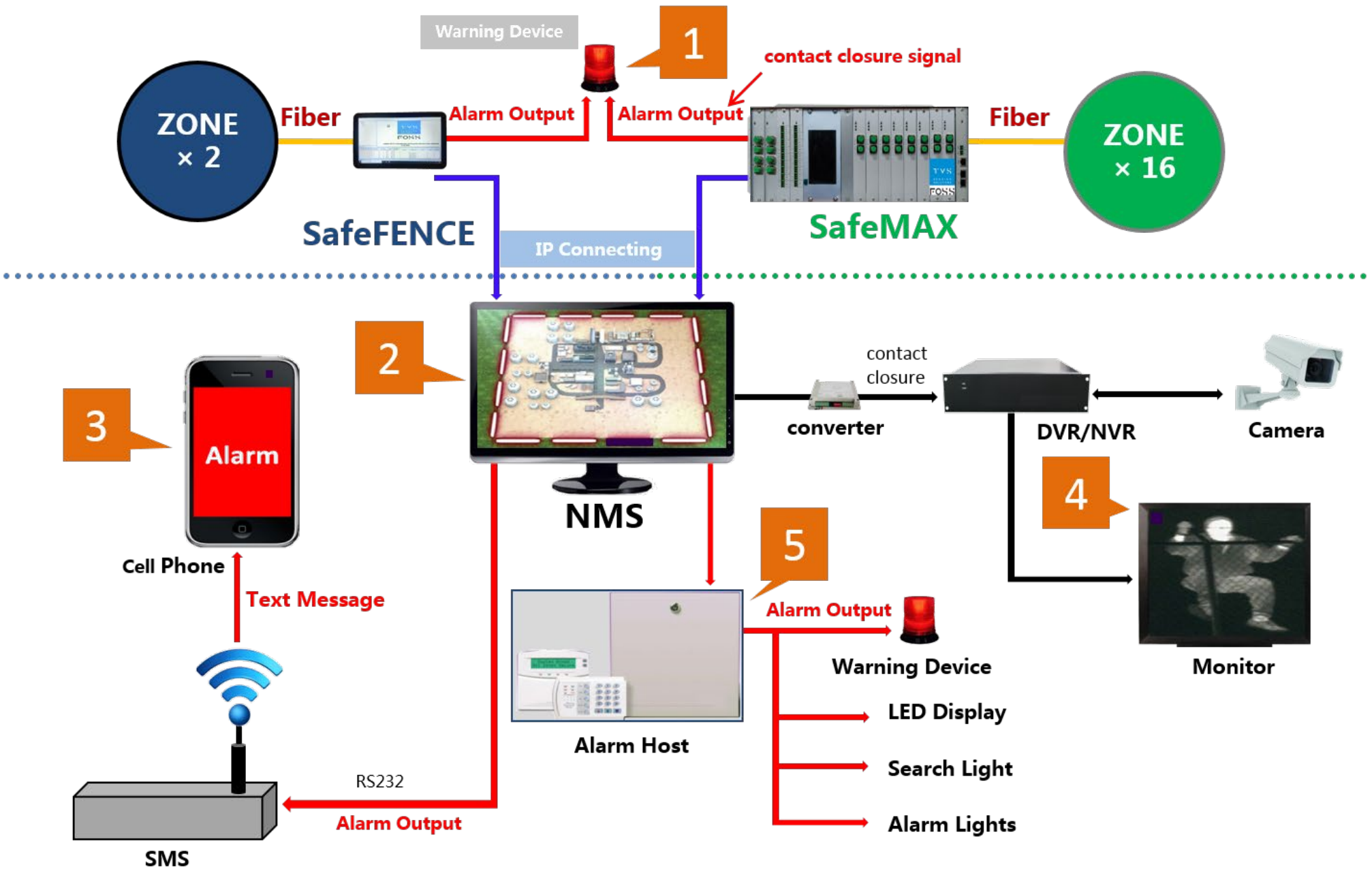
Alarm Details :

- Zone wise
- Time of alarm
- Date of alarm
- Fiber cut alarm

Alarm Treatment:

- Weather inclusion
- Operator based

Integrated Alarm Management - 3rd party device integration



Applications

- Home Land Security
- Prisons/ farmhouses/jewellery shops/ banks etc.
- Airport perimeters
- Petroleum/Power plants/ sub stations/ solar parks/ industry
- Manufacturing facilities/ factories
- Museum and other critical infrastructures
- Forest /Agricultural lands
- Nuclear power plants/critical infra
- Research facilities and laboratories
- All kind of critical and secular structures where third party intrusion chances are high

FOPIDS Solution Advantages

a) **Zone based intrusion Detection:** Even if one zone becomes defective, rest of the zones continue to function and report intrusion without any problems

b) **Scalable solution** : More zone/fence can be added later so customer pays only for what is being used currently

c) **Hardwired Zones** : Each Zone is hard wired so it is impossible to hack and defeat the system

d) **Cost Efficient** : Overall solution is very cost effective. Per km cost is very low as compared to foreign competitors.

FOPIDS Operational Advantages

a) **Indigenous solution** : Design and technology owned by Indian company. No dependency on foreign supplier for after-sales support

b) **Local manufacturing** : Equipment manufactured in India so valuable FOREX is saved

c) **Patent owned by Indian company** : FOSS owns the patent on the solution design.

d) **In-house Software** : User Interface software is developed and designed locally in India so it is secure against any external cyber threat.

TRUST, VALUE & SERVICE- TVS GROUP

TVS SENSING SOLUTIONS

- Operational since 1994
- 100% export oriented unit in 2005
- Space: Land 450 K, Built up - 50 K Sqft
- Employees: (175 –On roll, 130 –Contract)
- Products: Switch assemblies, Sensor assemblies, Solenoids, Electronic component carrier & custom assemblies
- Annual Capacity: 20 million assemblies
- UL / VDE / ENEC approved for Switch manufacturing
- Four Sales Offices and ten Distributors across the India.

ISO 9001
ISO / TS 16949

ISO 14001
OSHAS 18001

TVS GROUP

- Founded in 1911 as transport service company
- Based in Chennai and Madurai, India
- Leading Indian automotive conglomerate with USD ~6 bn sales
- Encompasses more than 45 companies with ~25,000 employees
- Visit our group Companies at www.tvsss.co.in/index.php?user/tvsgroup

Fiber Optic Sensing Solution Pvt Ltd - [FOSS]

- 100% owned subsidiary of TVS Sensing Solutions:
- Manufacturer of advanced Fiber Optic Sensing Technology products and solutions based on Distributed Acoustic Sensing (DAS) for Perimeter security and surveillance.
- Deliver a complete functional solution for the major layer of fiber optic physical security.
- Industry knowledge and expertise across broad range of technologies.
- Service customer requirements through direct sales & network of distributors in India & rest of the world.
- Tie-up with other OEMs to cover diverse applications

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THANK YOU