APACHE
LONG RANGE

LONG RANGE FIBER OPTIC D.A.S. SYSTEM FOR PERIMETER INTRUSION DETECTION ON FENCES AND PIPELINES

UP TO 50KM+50KM WITH SINGLE ANALYZER E 10M PRECISION EVEN IN REDUNDANT MODE

EXTREME SECURITY

V 1.0

CIAS®

APACHE LONG RANGE

The **APACHE LONG RANGE** system uses **Distributed Acoustic Sensing (DAS) fiber optic technology** to ensure surveillance over large areas of fences or pipelines. It can monitor **up to 50 km with a single controller**, making it extremely convenient for protecting large perimeters. The system accurately identifies all potential attack attempts with the precision of 10 meters, including fence climbing or cutting, cable theft from pipelines, and even drilling or digging near gas and oil pipelines.

Key features of the APACHE LONG RANGE system include:

- **AI capabilities for acoustic classification**: The system identifies any event along the monitored km, and thanks to AI, the detected threats can be classified (eg. : walking, digging, vehicle), which gives greater insight to user about what's happening. You can secure your borders by detecting the events around the fence.
- **Ease of integration into existing security systems**: APACHE LONG RANGE seamlessly integrates with a broad array of popular third-party systems, offering operational teams immediate access to real-time information from various devices through one unified interface, enhancing the overall security response capability.

KEY ADVANTAGES:

- Immunity to electromagnetic interference, ensuring reliability in diverse environments
- Cost-effectiveness in monitoring large perimeters
- High detection accuracy over long distances

TECHNOLOGY

D.A.S. (Distributed Acoustic Sensing), O.T.D.R. (Optical Time Domain Reflectometer) & A.I. algorithms

DAS (Distributed Acoustic Sensing) is a technology using fiber optic cables, that can detect **acoustic signals**.
Unlike the single point sensors, **distributed sensors** can measure acoustic signals at many places in a continuous structure at each point of the fiber cable.
The DAS system can perform real-time control and measurement through fiber optic cables extending across the targeted borders. So to say, **Fiber cable is used as a sensor or a microphone**.
Since light waves that propagate in the fiber optic cable are affected by acoustic waves, these affected lights can be detected by an **OTDR** (Optical Time Domain Reflectometry) device.
The OTDR device measures many features in the system, such as cable conditions, finding their break locations over a hundred kilometers, and transmission-related problems.

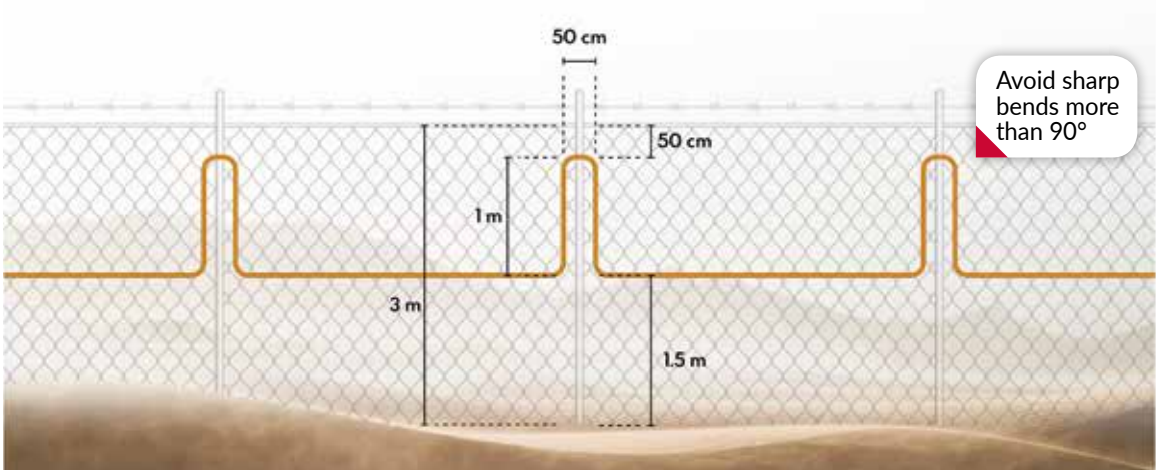
Its analysis **helps to determine if the fiber is broken or under any other loss-causing effect**, such as:

- Fiber Break
- Fiber Bending
- Splice Loss
- Connector Loss
- Patch Panel Locations
- Reflectance

The signals coming from the sensor cable are **detected and classified by the special A. I. algorithms** to determine if the system is under threat of intrusion in real time, significantly **reducing nuisance alarms**.
The system is easily integrated with CCTV & VMS.

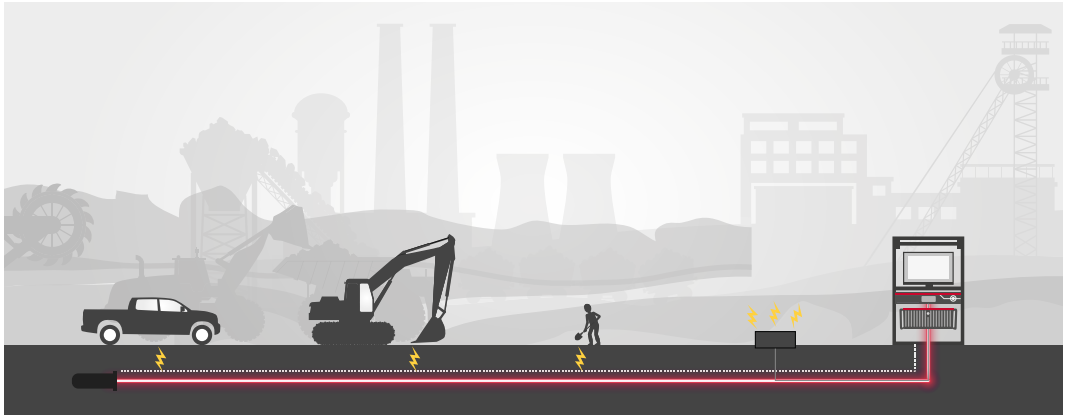
FENCE APPLICATION TIPS

Secure the cables to the fence, preventing swaying due to external factors like wind and bird strikes or animal bites.



SPECIAL VERTICAL APPLICATIONS

- Threats can be detected in **real time** with high precision on a long-range **fiber optic cable** in areas like pipelines, processing plants, large buildings, road safety, campus etc.



PIPELINE NETWORKS: OIL, NATURAL GAS AND WATER

Oil&Gas, petro-chemical and energy industries rely on vast networks of pipelines to transport and distribute fuels in liquid and gaseous forms to industrial users and customers. Pipeline were **built on land, underground, and offshore, often traversing remote areas** which are **subject to harsh weather conditions**. These vast pipeline networks are important to national security and economic vitality, and it's vital to protect their integrity from external threats.
Fiber optic distributed acoustic systems **permit the supervision of long-distance pipelines** thanks to the DAS technology. With only one fiber optic cable laid along the pipeline, APACHE LONG RANGE can detect **third party intrusions like digging or excavations, ground movement and structural variations, as well as early detect leaks in pipelines** transporting liquid or gas, by looking for the noise or pressure waves generated by the fluid escaping the pipe.

DATA CABLE & TELECOM LINES NETWORKS

For the protection of interconnected systems enabling communication and data exchange, the effective detection of external attacks is crucial to prevent unauthorized interceptions. The APACHE LONG RANGE system offers numerous advantages to safeguard transmitted data, such as:

- **Electromagnetic Interference Immunity**: Crucial for data integrity in industrial environments or areas with high interference.
- **High Sensitivity and Precision**: Capability of detecting intrusions or anomalies with great precision, enhancing the physical security of data networks.
- **Long-Distance Transmission without Signal Degradation**: Ensures effective coverage over large distances, ideal for extended infrastructures.

APPLICATION SCENARIOS

Border Security

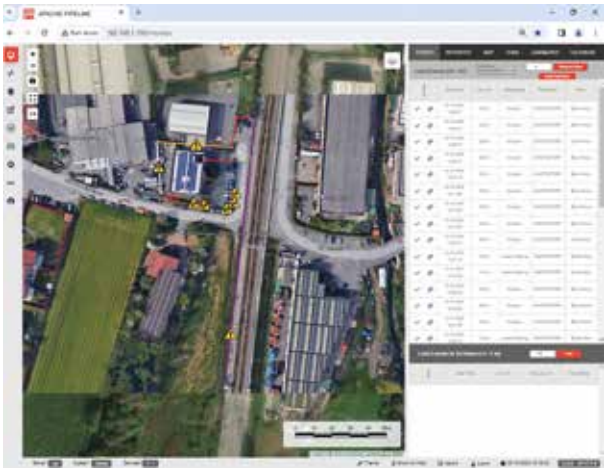
Large Critical Infrastructures

Pipelines

AVAILABLE MODELS

APACHE LONG RANGE

- SINGLE channel, with ranges 10 or 50km
- DUAL channel, with ranges 5, 30 or 50km



Product	Channel	Distance	Description
APACHE-LR-S10	Single	10 km	Cost-effective solution for small-scale security and monitoring; fast, reliable, and easy to install.
APACHE-LR-S50	Single	50 km	Suited for long pipelines, big facilities, and energy cables requiring protection and monitoring over thousands of kilometers.
APACHE-LR-D5	Dual	5 km	For small scale projects, offers a resilient and cost-effective solution; double-channel for security and monitoring.
APACHE-LR-D30	Dual	30 km	For mid-scale projects ensuring monitoring and security, including for industrial and military facilities, cities, and data-centers. Enhances product resilience.
APACHE-LR-D50	Dual	50 km	Provides the security and monitoring solution needed for thousands of kilometers, also increases resilience.

MONOMODAL FIBER OPTIC CABLE - Technical features

SENSING TECHNOLOGY	Coherent Optical Time Domain Reflectometer (COTDR)
MAXIMUM FIBER LOSS	10dB (typical max distance ~ 10km / ch)
ANALYSIS	Intrusion detection algorithms optimize sensitivity and probability of detection.
PINPOINT	10 m between detection points along sensing fiber (100 measurements per km of sensing fiber) 100 m minimum cable separation between individually reported disturbances (simultaneous)
REDUNDANCY	Available in DUAL version only
ZONES	Independent detection zones, configurable via software
FIBER TEMPERATURE RANGE	-40 +70 °C
CONNECTION PORTS	TCP/IP (Ethernet)
INPUTS AND OUTPUTS	FC/APC single mode optical connector (back, for sensing cable) 1 x USB2 ports (on back) 1 x Ethernet ports (10/100/1000 Mbps, on back)
POWER SUPPLY	110 to 240 Vac, 47 to 63 Hz, auto ranging.
POWER CONSUMPTION	85 W typical, 125 W max
DIMENSIONS / RACK CLEARANCE / WEIGHT	49 cm (19") x 50 cm x 8.9 cm (2U), 8 kg

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we use GREEN ENERGY