



Fiber Optic Security System

Patent ID: 102025000019954

Bizclap Security System – Fiber Optic Smart Lock

AVL Italia
Official Partner



Bizclap - Fiber Optic Security Locking Device

A Bizclap's smart lock that merges the ruggedness of an industrial lock with the sensitivity of a fiber-optic sensor.

An internal light source injects photons into the fiber cable that runs from one connector to the adjacent twin: **the uninterrupted light path is the key.**

While the beam completes its loop, the device remains in a secure state; if the cable is cut, bent beyond its minimum radius, or tampered with, the beam is lost and the electronics issue an instant alarm to the RF gateway. (optional communication with cellular network by embedded SIM)

Key Features

- **Cryptographic IR modulation:** Cryptographically-authenticated optical seal with IR optical event-based detection and true-random generation, a patented anti-spoofing system.
- **Optical heartbeat monitored 24/7:** 2.4 GHz RF or LoRa, end-to-end encryption, built-in 4G/5G option
- **12+ months of battery life** with 2 × AA replaceable with early battery replacement alerts.
- **Extreme resilience:** shock-proof, IP-rated housing; operates from $-40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$; impervious to rain, dust, and fuel vapors.



Bizclap Security System – F.O. Locking Device Technology

AVL Italia
Official Partner



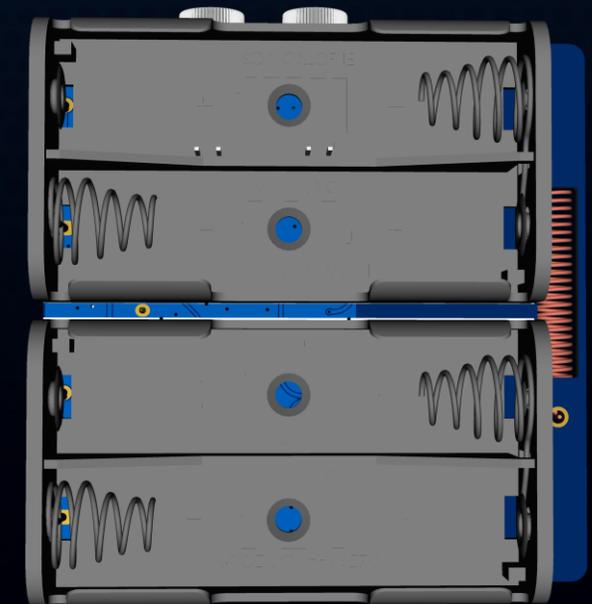
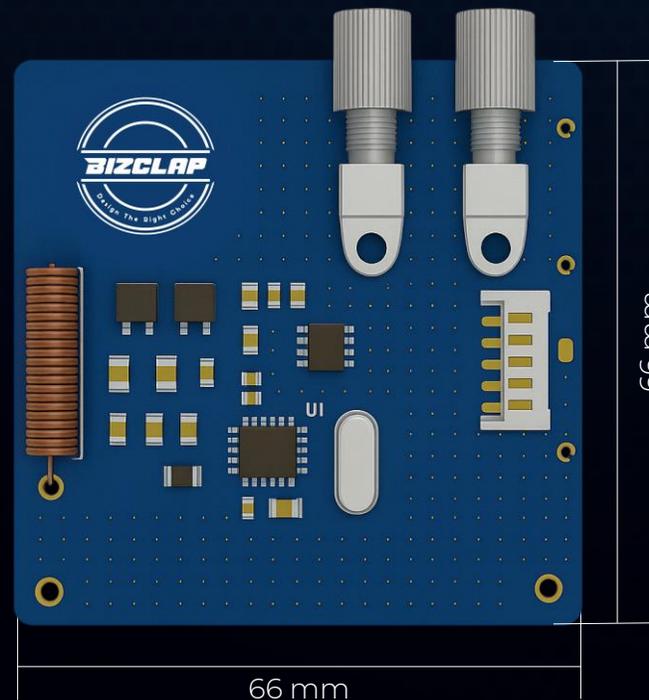
Bizclap Optical-Lock Device

If light fails to reach the second connector, the microcontroller detects the instantaneous photon drop, logs the event, and transmits:

CUT event: cable severed or disconnected.

UNLOCK event: authorised opening via app/NFC (auditable log).

Both events store a timestamp, battery level, and location data relayed by the gateway, providing complete traceability of every access



Bizclap Security System - Workflow

AVL Italia
Official Partner



Camera

Associated with each smart lock, when triggered by the backend following an alert from the device, it captures an image or short video of the scene.



Patented Hardware & System

Our system and its innovative components, such as the **Optical Lock**, have successfully passed patentability testing, and the patent application has been duly filed.



ARESTM
Advanced Real-time
Event Surveillance



Devices Fleet

Acts as an active security system, detecting opening, tampering, or cable cutting and sends alert signals.



Edge Gateway

Collects signals from multiple devices and cameras, sending the collected data to the central backend.



Cloud / Server

Central control hub, receives alerts, handles camera requests, stores data and media, and logs events, processing everything in real-time and updating the user dashboard.



Control dashboard

User interface with a real-time map and device status data, Enabling operators to view device conditions, access media and event logs.

Bizclap Security System – Dataflow

AVL Italia
Official Partner



Devices Dataflow:

Bizclap Optical-Lock Device: Detects and immediately transmit different Alert Messages regarding tampering, low battery, or authorized unlock to the Edge-Gateway.

Edge Gateway: can aggregate multiple nearby locks/cameras and forwarding data via 4G/LTE messages using cellular network from a single SIM.

Camera: receives an instant trigger from the Event Processor and captures a high-resolution snapshot or short video clip.

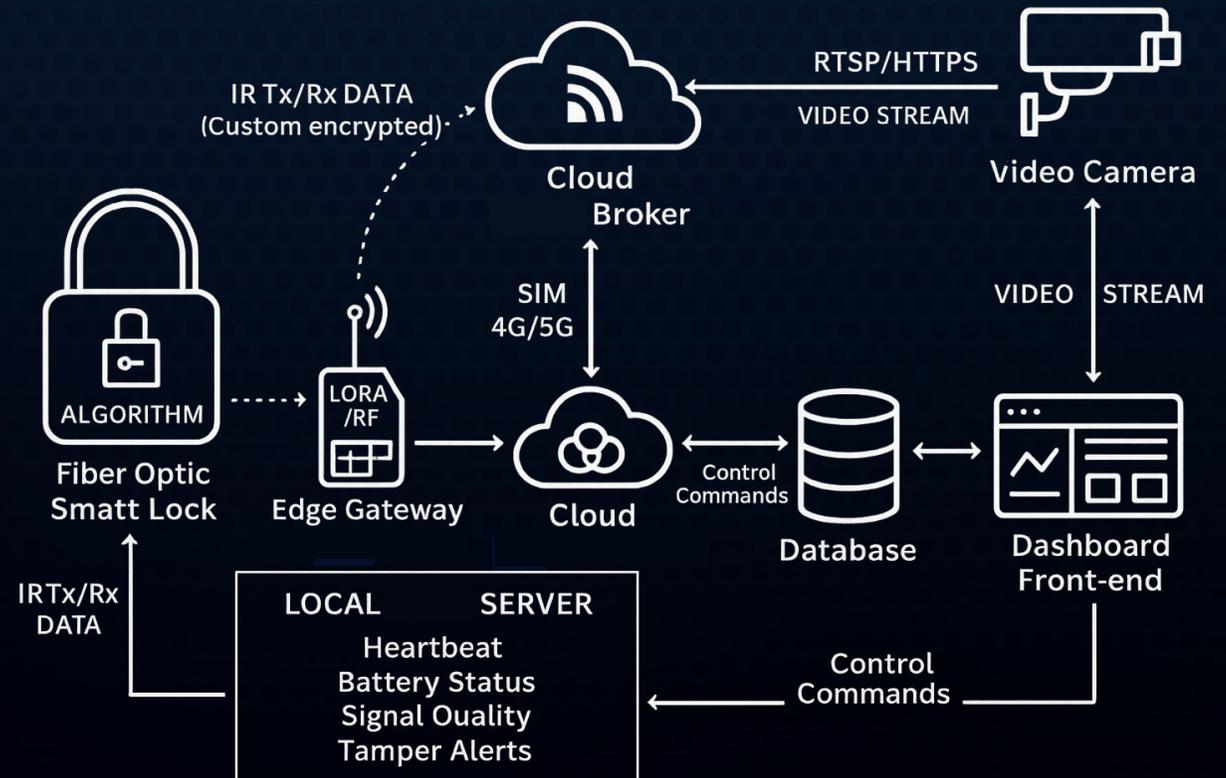
System Dataflow:

Cloud / Server: ingests all device messages, authenticates the sender, and routes them to the Event Processor.

Media Storage: stores images/video; each file is tagged with device-ID, timestamp, and location metadata.

Event Processor & Rule Engine: enriches events, enforces business rules (e.g., after-hours alarm escalation), triggers cameras, and writes immutable logs.

Monitoring Dashboard: streams live alerts, thumbnails, and historical analytics to ministry operators and exposes secure REST APIs for integration with other systems.

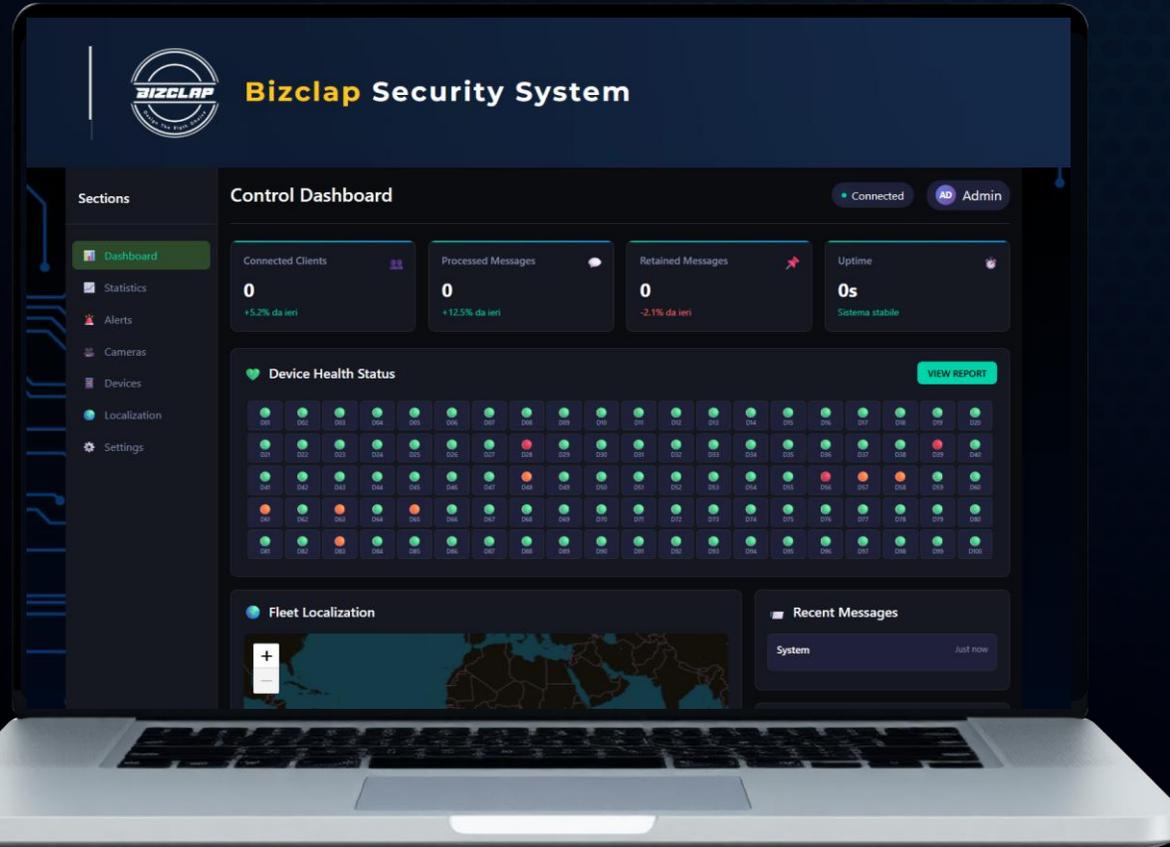


Bizclap Security System - Control Dashboard

AVL Italia
Official Partner



Dashboard for Fleet Monitoring



Dashboard for Fleet Status & Statistics



[TRY YOURSELF THE CONTROL DASHBOARD THROUGH OUR DEDICATED DEMO!](#)



Design the Technology of tomorrow



Bizclap S.r.l

Corso Ferrucci 112, 10138
Torino- italia
info@bizclap.eu



info@bizclap.eu



www.bizclap.it



+39 011 1911 5482



Bizclap S.r.l