



VIGILATE

# Red Light Function

Red Light Function  
Enforcement (Anpr)



# Red Light ANPR

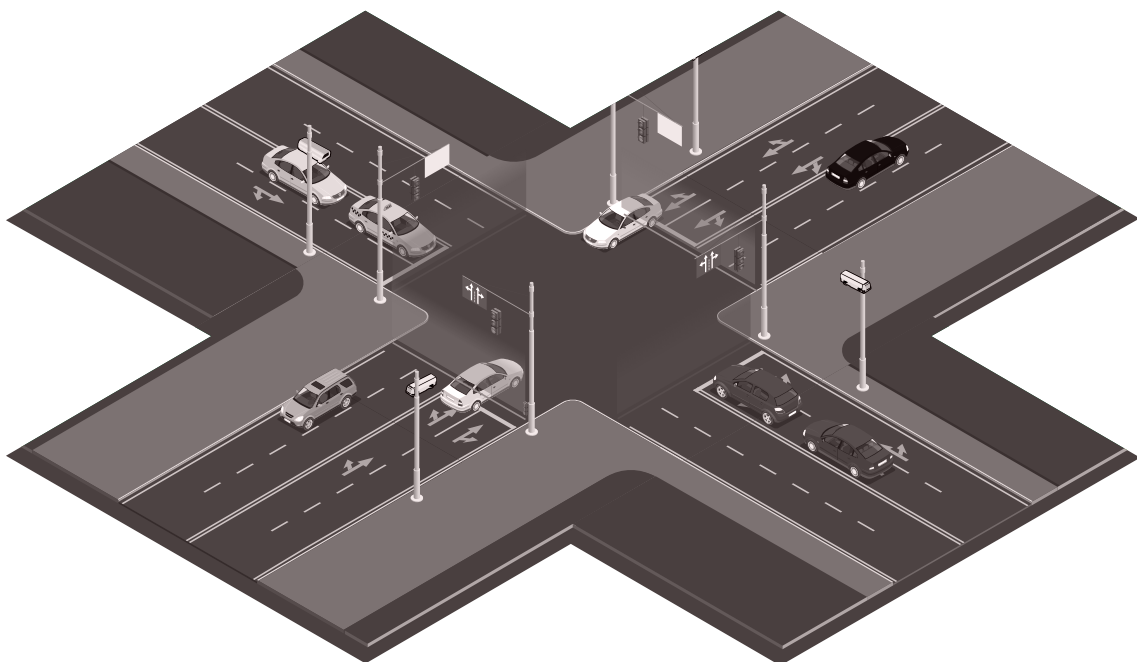


**Video analytical  
function on board  
the camera for the  
recognition of the  
red traffic light when  
crossing the stop line.**

## Red Light ANPR



**We speak to the system integrators  
who operate in the field of  
enforcement solutions.**



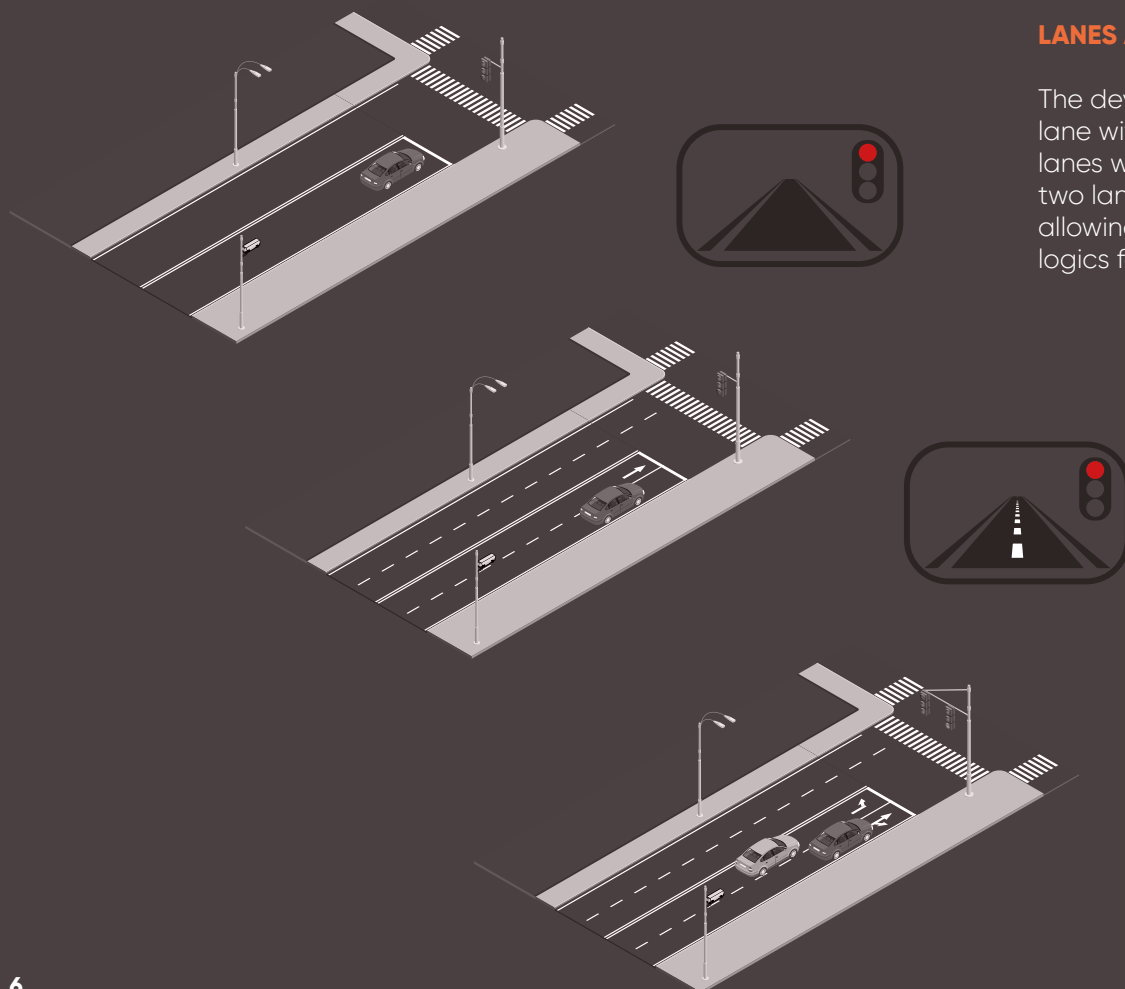


## **On Board Red Light enforcement solutions**

Vigilate's RED-LIGHT system allows you to identify and document traffic light violations in parallel with the monitoring of vehicles in transit using an application incorporated directly on the camera.

Video analysis system for identifying red light violations  
The non-invasive solution based on image analysis

## Examples of applications



### LANES AND TRAFFIC LIGHTS

The device can operate on one lane with one traffic light, two lanes with one traffic light and two lanes with two traffic lights, allowing different operating logics for each traffic light.



Intersections are the most risky and delicate traffic situation of any road infrastructure. Cars, trucks and motorcycles pass each other and often mix with vulnerable road users such as pedestrians, motorcyclists and cyclists. These crossing and turning crossroads cause many accidents, including serious or fatal ones, often due to carelessness and vandalism.

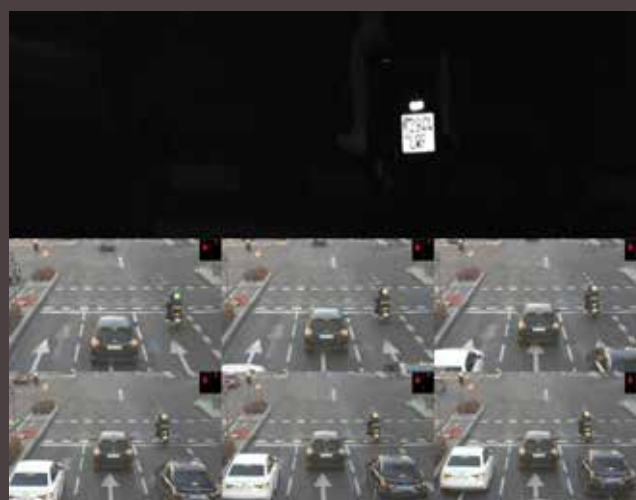
## BREACH DETECTION

Vigilate REDLIGHT creates a real-time spatial representation of the intersection based on sophisticated video analytics. Within this representation, virtual zones can be defined which represent the lanes and risk areas of the intersection; as a result, Vigilate REDLIGHT is able to detect and document violations.

## CROSSING THE STOP LINE

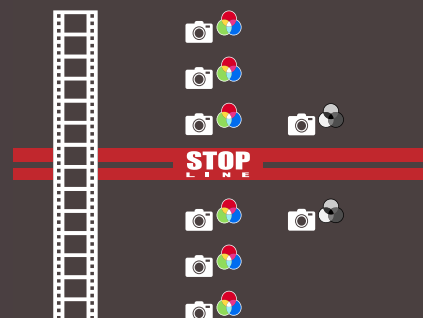
At the intersection, the STOP line marks the extreme point at which a vehicle must stop when approaching to avoid potential collisions.

The Vigilate REDLIGHT system accurately detects any violation of this limit stop obligation. Trigger thresholds can be freely configured to correspond to traffic light signals or line crossing event.



## OPTICAL DETECTION OF TRAFFIC LIGHTS

Optical traffic light detection eliminates the need to physically connect the enforcement system to traffic lights. Traffic light status is automatically detected using computer vision technology.



## PHOTOGRAPHIC AND VIDEO DOCUMENTATION

Vigilate REDLIGHT produces photographic and video documentation.

At the time of crossing, up to six color photographs are generated (three before and three after the stop line), two black and white photographs of the OCR analysis (one before and one after the stop line) and a video of the entire passage, the latter can be defined as starting several seconds before the red light goes off or from the trigger of crossing the stop line triggered by the video analysis.

All the documentation is also provided in a single photographic composition made up of 7 images.



## Red Light ANPR

# Main features of the camera



## High performance professional OCR

OCR library mixed between traditional approach and neural network to be more precise in character recognition OCR to improve nationality recognition

## Multiple images capture in sync

Strobed pulsed infrared illuminator

## High-Speed CMOS

Global Shutter, Rolling Shutter, Black/White, Color, from 2 to 12 Megapixel

## Day & Night

High performance day and night

## PoE

UPoE 60W class 6 power supply

## Certifications

EN ISO 9001 :2015 , ISO/IEC 27017:2015  
ISDP©10003:2020

## Double camera

Double head for OCR and Context

## Deep Learning

Algorithm training on a neural network directly produced by the Vigilate R&D team.

## HD SSD

from 128GB to 4TB HD in solid state technology

## NVIDIA Inside

Powered by NVIDIA deep learning hardware



## API

REST API libraries (with authentication) that guarantee the possibility of integration with third-party systems.





## Local Nvr function

Continuous recording function on board high resolution video streaming camera; transit video clip production.

## AID

AID (Automatic Incident Detection) gate algorithms for traffic control (stationary vehicle, wrong-way vehicle, slow traffic, queue).

## ANPR

OCR library on board with 41 European, 13 Asian, 6 African, 5 South American nations and special license plates such as Trailers, Kemler ADR, Kemler ADR Empty, Tram.

## Vehicles classes

Classificazione diurna dei veicoli per tipologia in 11+ 1 (Macchine, Camion, Camion con rimorchio, Motoveicoli, Motocicli, Ciclomotori, Bus, Mini van, Big van, Cassonati, Caravan, sconosciuto).

## Colors

Daytime classification of vehicles by color in 11 classes + 1 (black, white, grey, red, blue, yellow, green, orange, pink, purple, cyan, unknown).

## Models

Model classification of vehicles in transit rear view (about 400 models supported).

## Streaming Video

Continuous streaming function RTSP H264, HLS, MJPEG and complete Onvif S profile protocol.



## Speed estimate

Transit speed estimation function

## Checklist

Black & White List

## Brand

Vehicle brand classification (around 100 brands supported).

## Cloud Ready

Compatible with Vigilante's v-SUITE general supervision platform.

# Technical features

## General parameters

### Software Features

Operating mode:

- continuously acquisition (free-run)
- on request (by SW trigger or HW trigger)

Both modes can draw on the two local lists that can be configured locally or by remote synchronization with the FTP server"

Real-time diagnostics:

- CPU temperature
- Mainboard temperature
- IR illumination module operation
- Lighting module current peaks
- Capture status of physically connected sensors
- Input current level (power port)
- Input voltage level (power port)
- Camera tilt angle
- Internal humidity level
- CPU consumption
- RAM consumption
- Storage disks status
- Utilization of the 4 physical cores (CPU monitoring)
- Check status of operational threads
- Monitoring of analysis times and operating status of active algorithms

Generation of any alarms (local and possibly remote) in the face of anomalies detected

Supported sending protocols:

- TCP (nei formati binario, XML, string)
- TCP Milestone
- FTP (imgs + dati testuali in \*.txt/\*.csv)
- RPC-XML over HTTP / HTTPS (messaggio BASE oppure ESTESO)
- Custom Protocol
- Seriale (su porta RS 485)
- Wiegand (è necessario installare SC20 converter)
- Xentinel message (over HTTP)
- v-SUITE message (over HTTP / HTTPS)

Supported communication protocols:

- TCP/IP
- UDP
- HTTP
- HTTPS
- FTP
- FTPS
- RTP/RTSP
- openVPN
- ONVIF (S- profile)
- NTP
- SNMP

Data protection:

- Possibility to activate the management of the web configurator by HTTPS connection
- FTPS encryption on TLS/SSL protocol
- AES-256-ECB encryption for data and images saved locally and/or sent via the supported protocols
- image hash using SHA-512 algorithm and possible encryption of the signature itself using AES-256-ECB
- Totally GDPR compliant storage management with periodic deletion of the history
- Cockpit masking function (in case of front detection of vehicles) in order to ensure respect for privacy
- Possibility to connect the camera inside an openVPN with certificate installed directly on board
- Advanced management of the firewall on the machine with the possibility of disabling access to the local servers present on the machine (FTP server, ONVIF server, SNMP server, service ports)"



# Compatible models

## v-LANE A5D2

5/2MP@75/60fps Multifunctional 250Km/h

## v-LANE A5D8

5/8MP@75/75fps Multifunctional 250Km/h



|                                |   |
|--------------------------------|---|
| <b>Optical group</b>           |   |
| Sensor OCR:                    | 5 MP (2560 x 1936) CMOS IR global shutter   |
| Frame rate OCR:                | Up to 75 fps  |
| Sensor Color:                  | From 5MP to 8MP rolling shutter sensor  |
| Frame rate Color:              | Up to 75 fps  |
| Optics:                        | Standard varifocal lens, 8-50 mm  |
| <b>Illuminator</b>             |   |
| Integrated IR illuminator:     | n. 8 LED IR (CLASS 1M CEI EN 69825-1 ED. 4, 850 nm IR LED)  |
| <b>Power Supply</b>            |   |
| Supported power supply:        | 24VDC (2,5 A) or +12VDC (5 A) or UPoE 60W class 6   |
| Consumption:                   | 12W typically   |
| <b>HW features:</b>            |   |
| Processor:                     | Quad-core + HW video encoder unit + Neural coprocessor  |
| Memory:                        | 16 GB e-MMC Flash   |
| RAM:                           | 4 GB  |
| S.O.:                          | Linux   |
| Storage Disk:                  | HD SSD 128 GB (Fino a 4 TB)   |
| I/O                            | N. 2 input opto-isolated<br>N. 1 output relè<br>N. 1 fast output strobo 12-24 VDC<br>N. 1 output open-collector 12-24 VDC   |
| Ports:                         | N.1 USB port<br>N.1 RS-485 port<br>N.1 10/100/1000 Mbps Ethernet port   |
| <b>General characteristics</b> |   |
| Dimensions:                    | 450 x 140 x 150 mm  |
| Weight:                        | 2,6 Kg  |
| Operating temperature:         | - 30°; +60°   |
| Humidity:                      | up to 90%   |
| Protection:                    | IP67 - class IK10 (on request)  |
| <b>Certifications</b>          |   |
| OCR library:                   | Certified high reliability, the library has been validated several times by UNI 10772:2016 class A for all vehicle classes  |
| Classification algorithms:     | The percentages of correct classification depend on compliance with the installation geometry but are above 90% regardless of the external environmental conditions |
| Data security:                 | ISDP10003:2018 - Privacy by Default e Privacy by Design   |
| <b>Regulations</b>             |   |
| Regulations respected:         | ISO/IEC 27001 / 27017 - 27018 ISDP©10003:2020   |

**Vigilate is a “tech company” specialized in the production of devices and software platforms for security and traffic control.**



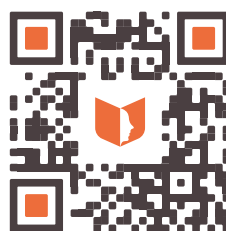
## Traffic

- **Parking**
- **Homeland Security**
- **Highway & Tolling**
- **Enforcement**
- **Smart Road**



## Security

- **Company, shops, hotel, parking**
- **Critical infrastructures**
- **Banks**
- **Retail, Fashion, GDO**
- **Control Room**
- **Logistics**



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