

A night scene of a traffic light intersection. The traffic light is illuminated with red, yellow, and blue lights. In the background, there are license plates: 'HKL=008' with a European Union flag, 'LA5I ABC', and 'S 578 IL' with a coat of arms. The company logo 'TEAS' is visible in the bottom left. The text 'RedLightMeter®' is prominently displayed in the center.

# RedLightMeter®

Smart and safe Crossroads  
TEAS's Virtual-RLoops™

## Traffic-light controlled intersections Multilane Red Light violation enforcement

Up to four traffic lanes and relative semaphores supported

Unique TEAS's OCR Virtual-RLoops™ technology

OCR performance certified to UNI 10772:2016 best "Class A"

Worldwide ANPR syntaxes included

Vehicles & Motorcycles violations detection

Provide pictures with digital certificates embedded as non-violable  
legal evidence

Industrial CPU running Windows 10 IoT Enterprise LTSC 2019

Local storage up to 256GB MIL certified SSD

Superb color video recorded at up to 100 fps/HDTV

Central TA management and automatically replicated data  
consolidation to center and/or Cloud

Wireless manageable I/O interface to Traffic Controllers

4G-LTE/Wi-Fi Router option with support for redundant SIM

8xPoE 802.3af/at plus 2xSFP/RJ45 Gigabit ports industrial switch  
with outstanding management and security features.

## **Efficient, flexible, extremely reliable, and certified**

**RedLightMeter**<sup>®</sup> provides best in class technology, remote managing, Cloud upload/data replication & back-up, and a complete software suite.

Technology Associates offers highly developed Enforcement Systems for detection of Red Light violations and, besides, openness for getting HD video streams 24 hours a day.

**RedLightMeter**<sup>®</sup> models provide a scalable number of LPR scanners, up to four per system meaning one per traffic lane.

LPR scanners have been **UNI 10772:2016** certificated with top **Class-A** OCR capability. OCR reliability has been certified with the incredible value of **>99.8%** accuracy, provided Day and Night.

Vehicles and Motorcycles driving the crossroad are absolutely well detected. No headlights, operational as well as meteorological circumstances may influence RLM's overall performance.

TEAS's main Management Platform **TA RLM Manager** provides RLM video and violations tagging console; printing of violations Reports, metadata and pictures exportation for feeding third parties fines procedures.

Besides, **TEAS IPView**<sup>®</sup> **LPR GT**, TEAS's multidiscipline ITS ERP provides all the needed technology and features set for becoming a perfect central manager and Gateway\* to and from GOV databases.

**TEAS IPView**<sup>®</sup> **LPR GT** is provided as **Milestone XProtect**<sup>™</sup> integrated Suite with a rich set of vertical elements for which, since 2013, we got "**Milestone Certified**" stickers.

**TEAS IPView**<sup>®</sup> **LPR GT** is compliant to Milestone's XProtect platform, Server and Client, **up to first release 2019**. The long-term mutual and official collaboration with the Danish company and our capabilities of supporting detection of all World Wide License Plates Syntaxes as Arabic, Russian, European, American, Australian, New Zealand, and most Asian as well as colored license plates, have skyrocket TEAS's Partners with relevant installations over the continents.

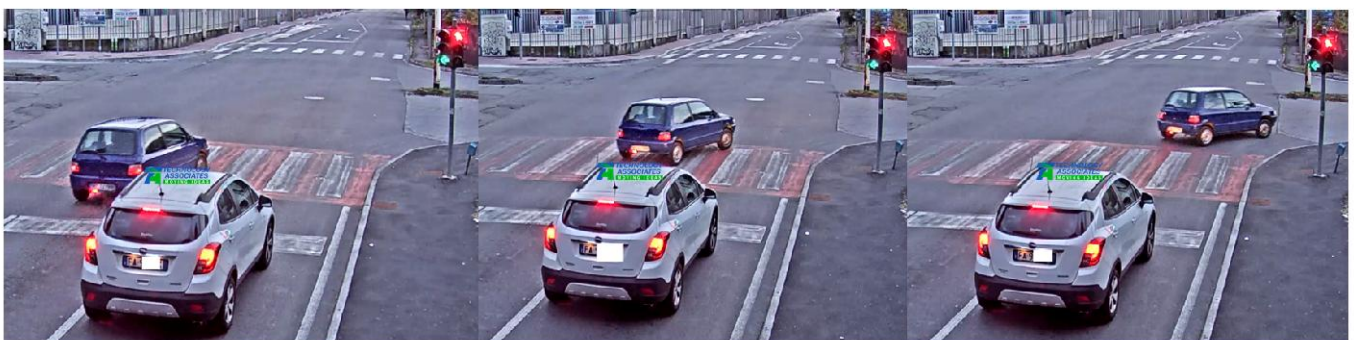
*\*For software development of personalized GOV Gateways refer to TEAS Professional Services.*

## TEAS Virtual-RLoops™ technology

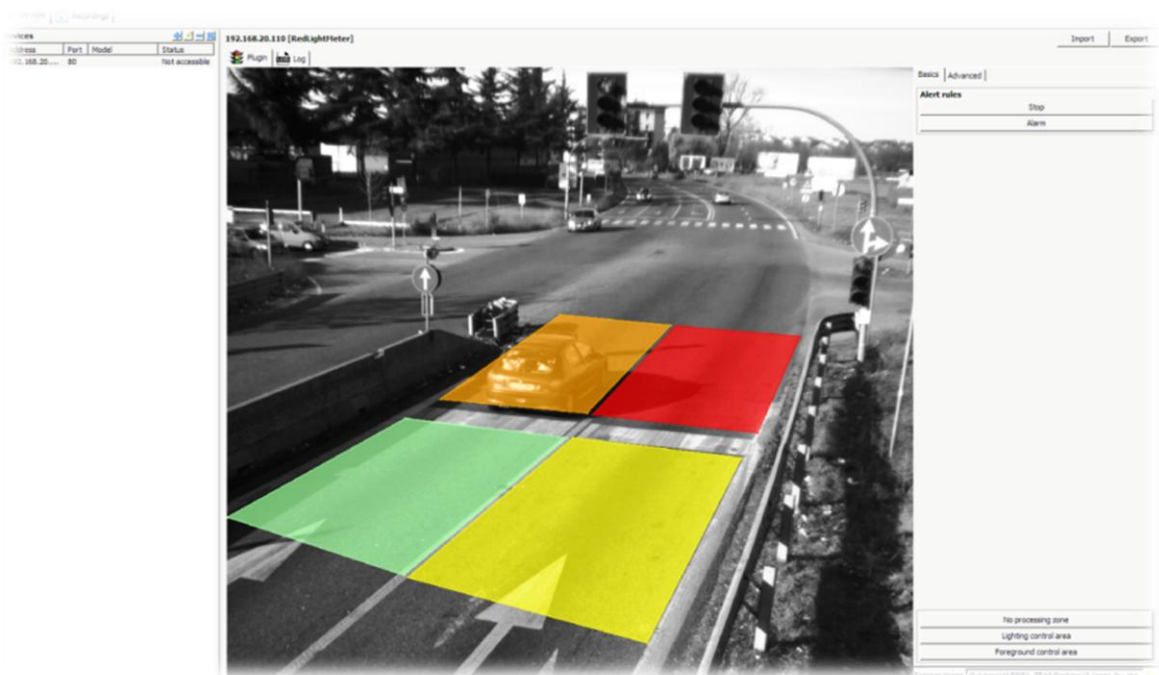
Technology Associates provide RLM violation detection through its original **Virtual-RLoops™** 3D technology.

Virtual-RLoops™ detects violations also in absolute total darkness and without any post processing or supplementary sensors. No loops on pavement, no radars.

**Virtual-RLoops™** detects vehicles, motorcycles and trucks driving through any crossroad during the red light phase. Detection is also done for all vehicles driving green-light traffic lanes and turning the crossroad left or right where red light is always active.



**Virtual loops can be reconfigured upon needs** i.e. after pavement repainting if STOP lane may be repositioned or adjusted: just connect to the RLM and set up. No loops built onto the pavement guarantees enormous advantage of zero maintenance costs after carriageway resurface or repair.



## Violation Reports & GDPR



For any violation **RedLightMeter®** saves the relative HD video and hundreds LPR pictures shot in sequence. The LPR pictures are marked in real time with **Digital Certificate** becoming legal probe for any legal entity. **Personal GOV Digital Certificate compliant to MD5 worldwide standard can be uploaded into any apparatus becoming an absolutely personalized and unique system.**

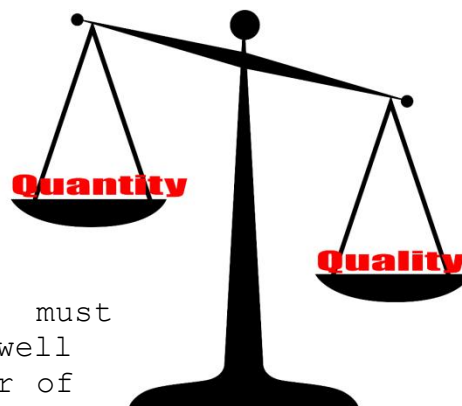
A condensed RLM Report with the sequence of violation is provided with four color and 2 LPR pictures. The Report is provided automatically just after Police Personnel confirms the infringement through the **TA RLM Manager Console**. The Report does not modify or infringe the original Data that is consolidated centrally and remain always stored unviolated.

Report as well video are Privacy compliant: elements outside the carriageway and private backgrounds in urban areas can be blurred with crosshatching transparency impossible to being removed. Resolution of pictures of the Report can be set up to 720p.



## Video means quality, not quantity

A very common mistake is the meaning that enforcement video must have relevant resolution. You will be simply amazed at the absolute surprising video sequences **RedLightMeter**® is capable of.



We're of the opinion enforcement video must have the right resolution for well understanding the violation, a rich number of frames per second for getting the right one at the right moment. Superlative WDR capabilities are therefore most important for excluding problems referred to invasive or non-ideal illumination, overall providing sharp and defined details as well as blurred zones being GDPR compliant.

We also need electronic image stabilization providing stable video in windy locations where poles on which apparatuses are mounted may swing. Providing natural colors is relevant whilst outstanding light sensitivity providing video in poor light circumstances remains a remarkable argument. Video must not suffer dazzling head lights in all circumstances, in particular during heavy rainy or stormy days. This is TEAS's understanding of providing quality video independently of solely "resolution".



## Video duration and parallel video streaming

**RedLightMeter**<sup>®</sup> provides and stores superb quality of color video, referred to full HDTV 1080p standard at 100fps of the overall scenario. LPR pictures are got at 1080p at 60 fps per traffic lane, up to 240 aggregated per second in case of four traffic lanes.



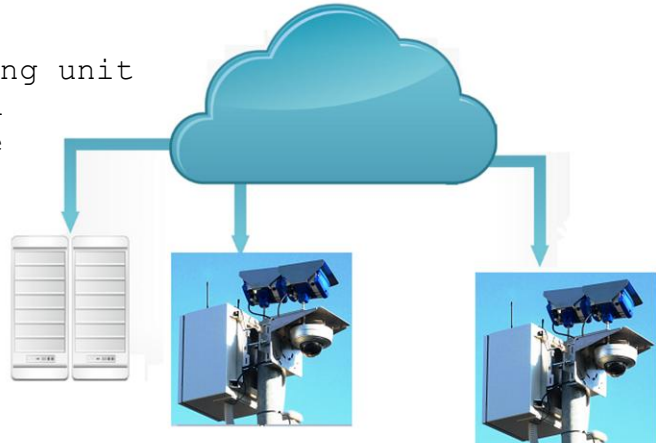
Overall selected high performance subsystems and as well as MIL-grade SSD storage provides high reliability and great performance. Pre and post violation sequences can be configured in duration up to minutes, where **-20/+20 sec.** is set as standard.

## Save and replicate your violation Data

Disaster recovery is our concern. Nothing can be lost.

Thanks to rugged local processing unit inside each RedLightMeter<sup>®</sup> data is saved into wide temperature certified SSD storage.

Data is replicated automatically from outside to central Server one or multiple times a day; this parameter remains freely configurable in each **RedLightMeter**<sup>®</sup>.

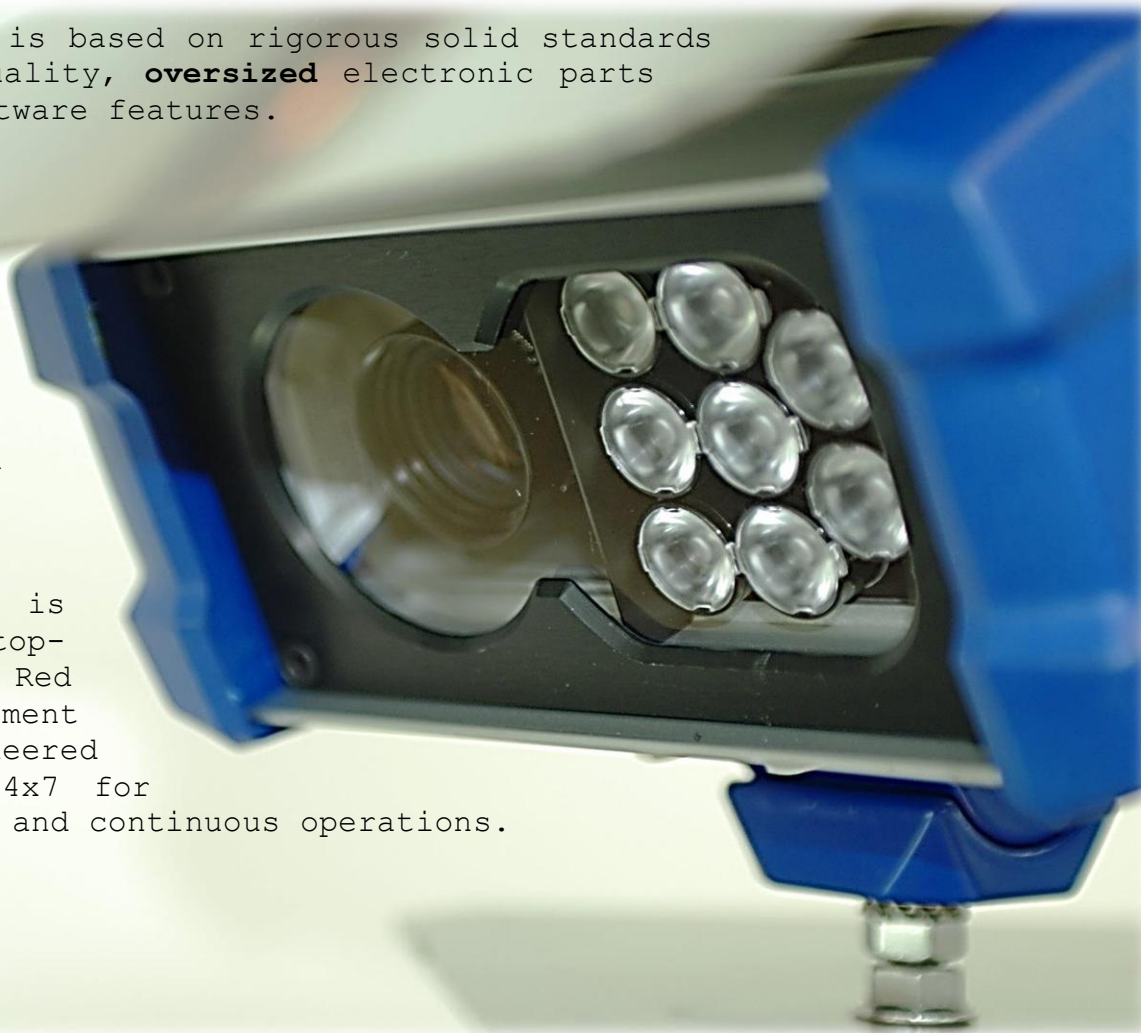


Automatic remote-to-central data consolidation scheduled procedures replicate the violations files/Data without any need of manual operations. TA RedLightMeter<sup>®</sup> Manager holds original stored data outside for 30 days - also this parameter is freely configurable - before going to overwrite. Giving the opportunity to retrieve archives to local **Datacenter** as well as to **Cloud back-up sites** everywhere located.

**RedLightMeter® offers what you newer expect.**

**RedLightMeter®** is based on rigorous solid standards in hardware quality, **oversized** electronic parts as well as software features.

Handcrafted entirely in Italy, and based primarily on high-end European technology, **RedLightMeter®** is TEAS top-performance Red Light enforcement system engineered for running 24x7 for years of solid and continuous operations.



**RedLightMeter® needs not any external flash light or IR source.**



Thanks to invisible pulsating IR-LED matrix LPR pictures are provided with superior quality 24 hours a day.

**Flexible. Configurable. Smart.**

TEAS **RedLightMeter**<sup>®</sup> is offered with four main configurations, where one or two traffic lanes detection models are the most common.

Two models of color cameras as well as two different versions of Processing Units are available accordingly to technical needs.

**RedLightMeter**<sup>®</sup> - Get what you need, when you need it.

Designed for any harsh environments and extreme climatic conditions starting -40°C up and up to 60°C, IP65- IP66- IP67- certified, TEAS **RedLightMeter**<sup>®</sup> fits the most challenging needs.

Unique in the market, **RedLightMeter**<sup>®</sup> is offered with a **scalable concept**, capable of performing from one up to four LPR scanners, each dedicated to the relative traffic lane and semaphore.





## RedLightMeter<sup>®</sup> outfits

**RedLightMeter<sup>®</sup> 1000** is delivered standard with one **TEAS HD6015** LPR scanner, capable of detecting up to 60 License Plates per second per one >4.5m width traffic lane. Scanner provides real time Digital Certificates into any single LPR picture.

Recognition of License Plates of vehicles as well as motorcycles and Nationality determination **are standard** features as well as basic vehicle classification and speed estimation for non-enforcement needs (statistics).

Metadata as date, time, position and S/N are permanently overwritten onto the LPR pictures.

The **Model 1000** is delivered with one compact **fixed Dome** color camera providing 1080p up to 100fps superior video, remote focus, optical zoom, forensic WDR and Optimized IR. Feature set extends to Electronic Image Stabilization and IK10+vandal resistance.

The **IPVBOX5** outdoor enclosure is our most compact outfit for the **RedLightMeter<sup>®</sup>**. The enclosure is IP65 certified and has vandal proof design, and two frontal closing locks with key. The enclosure is mounted standard on pole thanks to a Stainless Steel speedy mounting frame, engineered for storm & heavy wind locations.



The compact enclosure contains a superlative industrial wide temperature vibration resistant certified CPU based on Windows 10 IoT Enterprise LTSC 2019 delivered with configured RLM software.

The wide temperature certified 128/256 GB SSD disk provide long term reliability and, in average, >30-90 days of violations storage capability.

Finally, one industrial PoE switch with 8x 802.3af RJ45 and 2 Gigabit uplink ports provides all the needed power both for the RLM as well as other PoE devices.

**All RedLightMeter<sup>®</sup>** are delivered standard with one industrial 2x3G/4G Router providing Wi-Fi\* and GPS and the needed outdoor antennas. This set includes one industrial wireless I/O module for getting the Red Lamp signal(s) through direct attachment to semaphore's Digital Controller output board (if available) or through supplementary relays connected to the Red Lamps.

*\*Wi-Fi is meant exclusively for the Wireless I/O module and operating within short distance.*

**RedLightMeter® 2000** upgrades model 1000 providing two LPR scanners and a different Hi-PoE switch that provides also Remote Management, enhanced network security features as well as power redundancy capabilities. 2 Gigabit SFP ports and an overall fourfold PoE capability of **240W** provides all-ports Hi-PoE. The oversized IP65 certified DC Power Supply feeds the needed power.

**RedLightMeter® 2100** upgrades model 2000 adopting a **half-inch 2,1 MP CMOS** top-performance fixed BOX camera, instead of the Fixed Dome.

Here all features of the Fixed Dome are completely amplified, both in technological capacity and unparalleled light sensitivity.

It delivers high-resolution video at full frame rate and crystal-clear razor sharp images in any light. OptimizedIR ensures high-quality, low-noise video, even in completely darkness. It even supports defog functionality that automatically filters out fog to provide clearer video during prohibitive weather conditions.



**RedLightMeter® 3100** upgrades model 2100 with three LPR scanners. This model provides the bigger enclosure model IPVBOX4 containing enhanced top performance Intel I5 industrial CPU. This configuration doubles the wide-temperature certified SSD capacity to 256GB. This model is **meant** for installations where the third LPR scanner can be installed on the opposite side of the carriageway or onto gantry, guaranteeing optimal OCR performance.

**RedLightMeter® 4200** upgrades model 2100 providing four LPR scanners and two fixed BOX cameras.

## Options

There is the possibility for alternative fixed dome color camera available with same characteristics but marine grade 316L stainless steel enclosure.

TEAS mounting accessories are provided only in Stainless Steel AISI 304. To be configured and ordered apart.

## RedLightMeter® adopts fewer cables.

Operative connection to and from the **RedLightMeter®** is performed via main Ethernet switch as well through a 3<sup>rd</sup> parties rugged 4G/LTE/Wi-Fi Router.

Router provides dual 4G SIM support for failover/Carrier redundancy and support for multiple DynDNS providers, multiple VPN standards and more secure connection methods.

GPS/Glonass antenna provides continuous NTP synchronization.

Appropriate LTE and Wi-Fi outdoor antennas are provided as standard to be fixed outside RedLightMeter main enclosure.

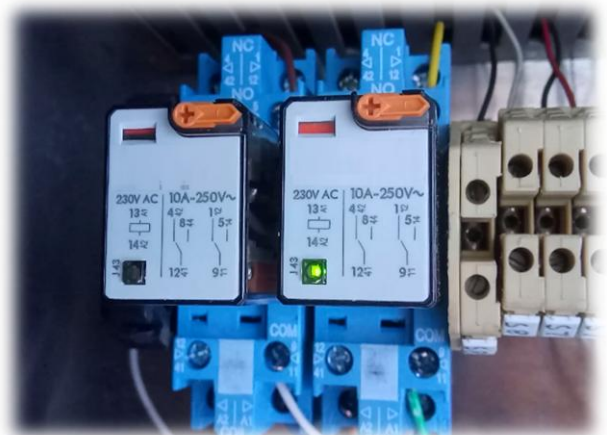


Connection to semaphore Control Unit is a compulsory need for getting the red-lamps signals. A Wi-Fi I/O option can be chosen for connecting **RedLightMeter®** to semaphore control unit.



Red signals can be got from 230VAC phases of single lamps.

This operative feature is performed with appropriate relays connected in between the lamp and the digital I/O module.



## TA Central RLM Manager violations management

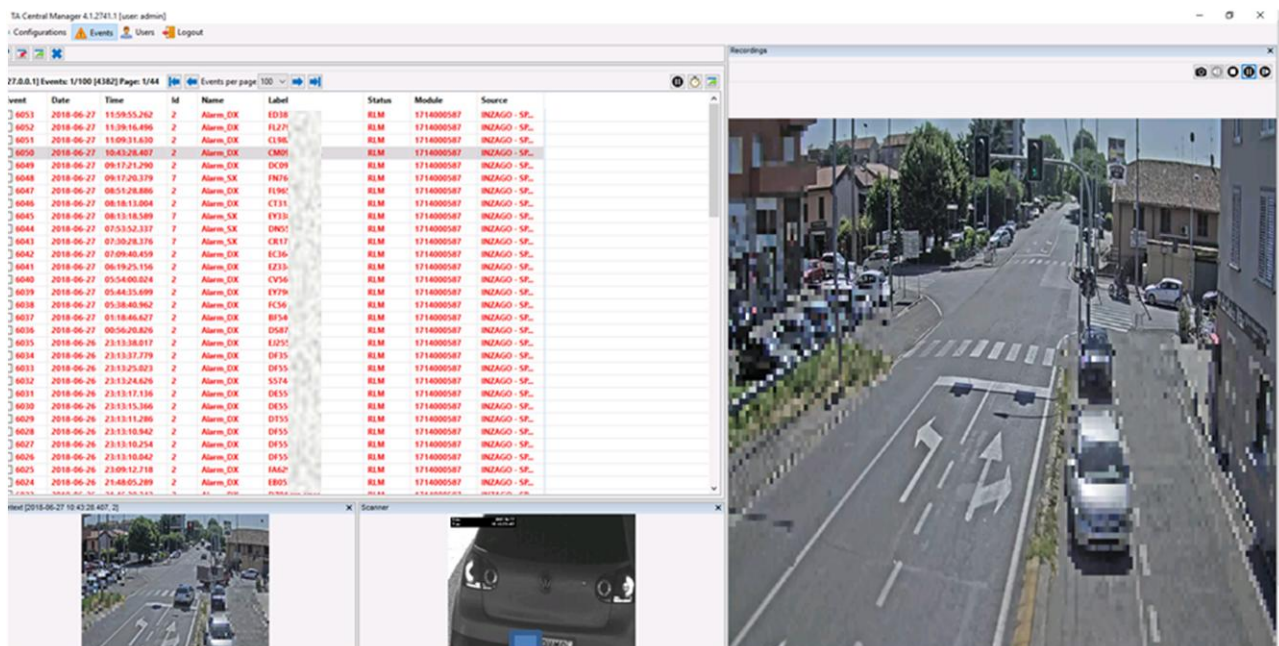
TA RLM Central Manager provides provide features as violation video console, click-2-violation validation, violation marking/tagging with colored mnemonic tags, consolidation check-box, report printing and more.

Evento	Data	Tempo	Id	Nome	Etichetta	Stato	Modulo	Sorgente	Livello	Etichetta	Note
<input type="checkbox"/> 6345	2018-07-02	12:49:17.587	2	Alarm_DX	DX072ZZ-ITA	RLM	1714000587	INZAGO - SPexSS11 ...	0	0	
<input type="checkbox"/> 6344	2018-07-02	12:33:34.927	7	Alarm_SX	DM598HD-ITA	RLM	1714000587	INZAGO - SPexSS11 ...	0	0	
<input type="checkbox"/> 6343	2018-07-02	12:22:09.114	2	Alarm_DX	GJ76VOT-ROU	RLM	1714000587	INZAGO - SPexSS11 ...	0	0	
<input type="checkbox"/> 6342	2018-07-02	12:01:30.780	2	Alarm_DX	EA407IM-ITA	RLM	1714000587	INZAGO - SPexSS11 ...	0	0	
<input type="checkbox"/> 6341	2018-07-02	09:31:39.974	2	Alarm_DX	CY						
<input type="checkbox"/> 6340	2018-07-02	09:31:16.295	7	Alarm_SX	DI						
<input type="checkbox"/> 6339	2018-07-02	09:21:55.630	2	Alarm_DX	DI						
<input type="checkbox"/> 6338	2018-07-02	09:12:36.371	7	Alarm_SX	FE201FS-ITA	RLM	1				
<input type="checkbox"/> 6337	2018-07-02	08:00:49.178	2	Alarm_DX	FG388WL-ITA	RLM	1				
<input type="checkbox"/> 6336	2018-07-02	07:51:11.712	2	Alarm_DX	CT883PY-ITA	RLM	1				

TA RLM Central Manager permits one-to-many managing of multiple systems and central data synchronization via scheduled data back-up.

Further details are explained during our on-site learning courses for Police Departments and Services.

Software interface is available in English, Italian, Russian, German, French, Spanish and Turkish.

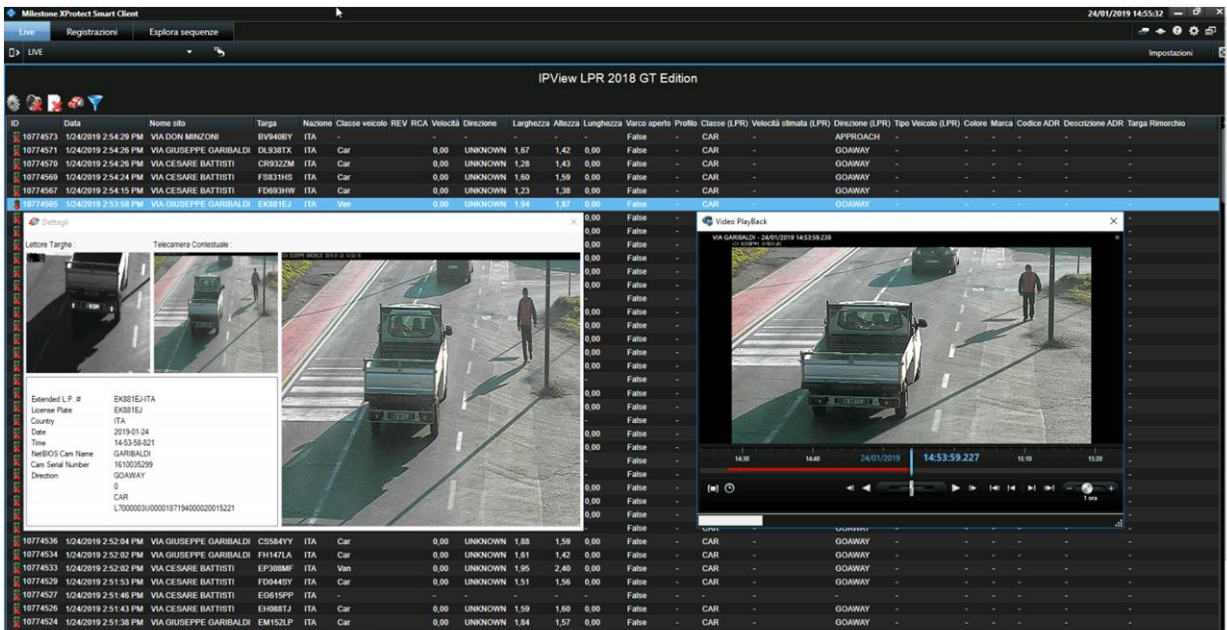


## IPView® LPR GT for Milestone XProtect – Total security

We provide integration of our apparatuses to the Milestone XProtect platform. This feature can be performed through the **IPView® LPR GT** for Milestone XProtect. A lot of possibilities can start from that integration without compromising the standard feature and functionalities of TEAS **RedLightMeter®**.

**IPView® LPR GT** has been tested for running with Milestone XProtect R1 2019. Metadata and video streams can be shown in real time in central Police departments using the Milestone Platform, GOV management sites will be advantaged by feeding the video walls and country control centers with HD color video got from all the **RedLightMeter®** as well as License Plates pictures.

Simple guided menu permits to get metadata and pictures related to traffic flows recorded by the RedLightMeter LPR scanner. **Within seconds** pictures and metadata can be retrieved from millions of records stored centrally.



The screenshot shows the Milestone XProtect Smart Client interface. The main window is titled "IPView LPR 2018 GT Edition" and displays a table of LPR records. The table has the following columns: ID, Data, Nome sito, Targa, Nazione, Classe veicolo, REV, RCA, Velocità, Direzione, Larghezza, Altezza, Lunghezza, Varco aperto, Profilo, Classe (LPR), Velocità stimata (LPR), Direzione (LPR), Tipo Veicolo (LPR), Colore, Marca, Codice ADR, Descrizione ADR, Targa, Rimorchio.

The table contains several rows of data, with the following rows highlighted in blue:

ID	Data	Nome sito	Targa	Nazione	Classe veicolo	REV	RCA	Velocità	Direzione	Larghezza	Altezza	Lunghezza	Varco aperto	Profilo	Classe (LPR)	Velocità stimata (LPR)	Direzione (LPR)	Tipo Veicolo (LPR)	Colore	Marca	Codice ADR	Descrizione ADR	Targa	Rimorchio
10774573	1/24/2019 2:54:29 PM	VIA DON MINZONI	BV940BY	ITA											CAR			APPROACH						
10774571	1/24/2019 2:54:28 PM	VIA GIUSEPPE GARIBALDI	DL938TX	ITA	Car	0,00	UNKNOWN	1,57	1,42	0,00				False	CAR			GOAWAY						
10774570	1/24/2019 2:54:26 PM	VIA CESARE BATTISTI	CR9322M	ITA	Car	0,00	UNKNOWN	1,59	1,43	0,00				False	CAR			GOAWAY						
10774569	1/24/2019 2:54:24 PM	VIA CESARE BATTISTI	F3831HS	ITA	Car	0,00	UNKNOWN	1,50	1,55	0,00				False	CAR			GOAWAY						
10774567	1/24/2019 2:54:15 PM	VIA CESARE BATTISTI	FD693HW	ITA	Car	0,00	UNKNOWN	1,23	1,38	0,00				False	CAR			GOAWAY						
10774565	1/24/2019 2:53:58 PM	VIA GIUSEPPE GARIBALDI	EK381EJ	ITA	Van	0,00	UNKNOWN	1,94	1,87	0,00				False	CAR			GOAWAY						

The interface also includes a video playback window showing a truck on a road, and a metadata panel for the selected record (ID 10774565) with the following details:

- Extended L.P. #: EK381EJ.ITA
- License Plate: EK381EJ
- Country: ITA
- Date: 2019-01-24
- Time: 14:53:58.921
- NetIOS Cam Name: GARIBALDI
- Can Serial Number: 1810000299
- Direction: GOAWAY
- Class: CAR
- L70000031-0000187194000020010521

## IPView® Visual Analytics & Alert Manager 2019

### WEB Reporting & Alarm Management

Managers show to statistical data and resume of what has happened outside.

We do in real time, inside and outside the XProtect Smart Client.

Any possible Visual Report as well as metadata export can be provided.

