VideoXpert Plates v 1.1

Automatic License Plate Recognition Software

Product Description

VideoXpert Plates is a software-based Automatic License Plate Recognition system for video streams. It detects and captures vehicle license plates, and then compares the captured plates against user-defined lists to identify VIPs or suspect vehicles, monitor parking lot access, catalog unknown vehicles, and alert operators accordingly. It simultaneously reads plates from multiple countries, provinces, and states, so local traffic and visiting vehicles will both be recognized. VideoXpert Plates can operate as part of a VideoXpert Video Management System or as a standalone product using the included browser-based user interface.

VideoXpert Plates consists of three software applications:

- VideoXpert Plates Manager provides centralized management of captured plate images, search engine, alert generator and notifications, video metadata, and host of the browser-based user interface.
- VideoXpert Plates ALPR provides the Optical Character Recognition (OCR) engine for real-time plate capturing and reading.
- VideoXpert Plates Plugin integrates VideoXpert Plates capture information into the VideoXpert OpsCenter client (when used with Pelco VideoXpert VMS solutions).

The VideoXpert Plates Manager is available in two versions: VideoXpert Plates Professional for parking and small city applications; and VideoXpert Plates Enterprise for larger city applications.

VideoXpert Plates Features

Highly accurate plate recognition and capture:

- Captures license plates from moving vehicles up to 250 kph / 150 mph
- Captures rectangular and square plates (up to 3 lines) with any combination dark-on-light and light-on-dark color schemes
- Powerful machine learning OCR engine
- Reconstructs images of damaged/broken plates using fuzzy logic matching, to increase read confidence and accuracy
- Compensates for plate carrier obscuring of license plate
- Capable of single- or dual-lane coverage from a single camera
- Directional filtering and reporting permits single-camera capture of plates in two directions simultaneously
- Able to read up to 8 license plates on a single vehicle
- Search on Plate number, Time, Date, Camera, Zone, Country, Direction, Status, Coordinates, and Alarms in real-time
- Allows for partial plate and wildcard character searches

Adaptable to your environment or application:

- Country independent and US State independent plate capturing without the need for additional databases or engines

- Enhanced Country/State syntax grammar filters to increase local special character/design capture accuracy while allowing captures of all plates
- Multiple user defined polygon Region of Interest (ROI) zones to speed plate detection processing and eliminate repeated captures of parked vehicles
- VideoXpert Plates Manager server stores all captured metadata and images with adjustable data retention times to meet local ordinance requirements
- Distributed Client-Server configurations employing fixed and mobile camera applications; auto synchronization of black lists, white lists, authorizations, and alerts from the primary to secondary systems create a fully unified system
- Single server configurations for small installations
- Integration with third-party VMS products that require alerts from VideoXpert Plates available using API

Increased situational awareness:

- Dual camera support for license plate and driver image capture
- Wrong-way direction detection and alarms
- Multiple user-defined authorized, un-authorized, white, and black lists for vehicle identification and classification
- On-screen display of license plate and associated vehicle driver for positive identifications
- User-defined Over-time in Area schedules application to define the length of time a vehicle is permitted in specified areas and generates an alert if the vehicle exceeds this time
- Supports continuous Free Flow or motion-based Trigger Mode plate capture
- Alert notification to VideoXpert VMS Event monitor, via e-mail, and push notifications to multiple users using PushBullet third-party application

Camera Compatibility

VideoXpert Plates is compatible with most standard IP cameras and LPR cameras with either rolling or global shutters. Important items to consider for cameras selection include:

- ALPR camera must only be used for license plate detection, using a camera for plate detection and observation may lead to improper alignment and increase missed plate reads.
- Recommend the use of standard fixed cameras with IR illumination or specific ALPR camera with global shutter over standard day/night camera to increase plate capture and reading rates
- Recommended IR Illumination 850 nm typical all countries, 750 nm US State of Florida, with maximum angle of illumination 5 degrees from center of camera's field of view.

Technical Specifications

Minimum Software Requirements

• Windows 7, 32 or 64 bit or greater

• .Net 4.5.2 or greater

Minimum Hardware Requirements

Server Requirements	VideoXpert Plates ALPR Server	VideoXpert Plates Professional and ALPR Server	VideoXpert Plates Enterprise and ALPR Server
Processor	•Parking Applications: Intel Core i5-4570TE (2.70-3.30) GHz (4 threads) or better •Roadways and other Applications: Intel Core i7-7700T (2.90-3.80) GHz (8 thread) or better		
RAM	8 GB RAM +1 GB per camera	16 GB RAM +1 GB per camera	32 GB RAM +1 GB per camera
Min free disk space	30 MB	4 TB	16 TB

Security Features

VideoXpert Plates includes the following security features:

- HTTP and HTTPS for end to end encryption
- Administration control of user accounts
- Support with running anti-virus

Software Licenses

VideoXpert Plates consists of three software packages: VideoXpert Plates Manager, VideoXpert Plates ALPR, and VideoXpert Plates Plugin. The VideoXpert Plates ALPR is the Optical Character Recognition (OCR) engine and is licensed on a per camera basis. The VideoXpert Plates Manager is the back-office application for queries, event, and alert processing. VideoXpert Plates Manager Professional will manage up to 1 million plate reads before FIFO, and is intended for parking and small city applications. VideoXpert Plates Manager Enterprise will manage up to 50 million plate reads before FIFO, and is intended for medium to large city applications. VideoXpert Plates Plugin is provided with no license requirement.

Model Number	Description
VXPL-1C	VidoeXpert Plates per camera license
VXPL-PRO	VideoXpert Plates Manager Professional software—stores up to 1 Million license plates reads
VXPL-ENT	VideoXpert Plates Manager Enterprise software—stores up to 50 Million license plate reads
VXPL-1C-SUP1	VidoeXpert Plates per camera license software upgrade plan 1YR
VXPL-PRO-SUP1	VideoXpert Plates Professional software upgrade plan 1YR
VXPL-ENT-SUP1	VideoXpert Plates Enterprise software upgrade plan 1YR
VXPL-VXINT	Integration license for use with VideoXpert VMS

Plate Image Characteristics

Item	Specification/Setting
Image formats	• BMP24 (Windows Bitmap) • JPEG • YUY2 • RGB (raw) • Gray8 (raw)
Image size	5.0 MB maximum
Number of plates per image	8
Character height range	18 to 70 pixels on target
Plate rotation angle to camera	
Rotation X (pitch)	± 35° maximum
Rotation Y (yaw)	± 40° maximum
Rotation Z (roll)	± 35° maximum
Supported characters sets	• Arabic • Chinese • Hebrew • Korean • Latin (English) • Thai
Maximum additional Country/US State Syntax Grammar Filters per ALPR Server	• 8 Countries • 5 US States
Maximum Number of Stored Plate Captures (FIFO)	• VideoXpert Plates Professional: 1 Million • VideoXpert Plates Enterprise: 50 Million

VideoXpert Plates Server Requirements—Single-Server Configuration Examples

Cameras / Server VideoXpert Plates ALPR With VideoXpert Plates Manager

The chart below offers examples of server specs and the number of cameras that can be managed per PC running on the same PC with VideoXpert Professional or with VideoXpert Enterprise.

Max Vehicle Speed (Approx)		Stop/Go	30 kph 20 mph	100 kph 60 mph	160 kph 100 mph*
Camera Frames Per Second (FPS)		2	10	20	30
Intel Core i5-4570TE (2.70-3.30) GHz	Single-lane	6	2	-	-
	Two-lane	4	2	-	-
Intel Core i7-7700T (2.00-3.80) GHz	Single-lane	20	12	6	3
	Two-lane	20	12	6	-
Intel Core i7-8700K (3.70-4.70) GHz	Single-lane	40	30	20	10
	Two-lane	40	18	10	5
Intel Core i9-9960X (3.10-4.40) GHz	Single-lane	120	90	60	30
	Two-lane	120	58	30	15

*For speeds greater than 160 kph / 100 mph the VideoXpert Plates ALPR must be placed on a separate server not combined with the VideoXpert Plates Manager.

Cameras / Server VideoXpert Plates ALPR Only

The chart below offers examples of server specs and the number of cameras that can be managed per server. These are based on a server running VideoXpert Plates ALPR capture services only.

Max Vehicle Speed (Approx)		Stop/Go	30 kph 20 mph	100 kph 60 mph	160 kph 100 mph	250 kph 150 mph
Camera Frames Per Second (FPS)		2	10	20	30	50
Intel Core i5-4570TE (2.70-3.30) GHz	Single-lane	12	4	4	-	-
	Two-lane	8	4	2	-	-
Intel Core i7-7700T (2.00-3.80) GHz	Single-lane	24	16	8	4	-
	Two-lane	24	16	8	-	-
Intel Core i7-8700K (3.70-4.70) GHz	Single-lane	48	36	24	12	6
	Two-lane	48	24	12	6	3
Intel Core i9-9960X (3.10-4.40) GHz	Single-lane	128	96	64	32	16
	Two-lane	128	64	32	16	8

Typical Camera Settings

Recommended settings using a standard IP camera for Plate Capture are:

| Item	Single-lane	Two-lane
Camera resolution	1280 x 720	1920 x 1080
Camera angle to plate		
Parking, Stop and Go, 0- 30 kph / 0 -20 mph	Horizontal <5°, Vertical <20°	
Roadway > 30 kph / 20 mph	Horizontal <30°, Vertical <30°	
Camera shutter speeds – rolling shutter		
Parking, Stop and Go	1/250 sec	
Roadway > 30 kph / 20 mph	1/1000 sec	
Camera shutter speeds – global shutter		
Parking, Stop and Go	1/250 sec	
Roadway > 30 kph / 20 mph	1/1000 sec	

Installation Field of View (FOV) Examples

The examples below are typical installation parameters for a single lane, vehicle target speed of 100 kph with a 3 mm to 9 mm lens for United Kingdom plates. Individual results may vary, please contact the factory for specific applications.

Pelco Sarix IBE229-2R 1920 X 1080, 20 fps, 125 kph, 78 mph
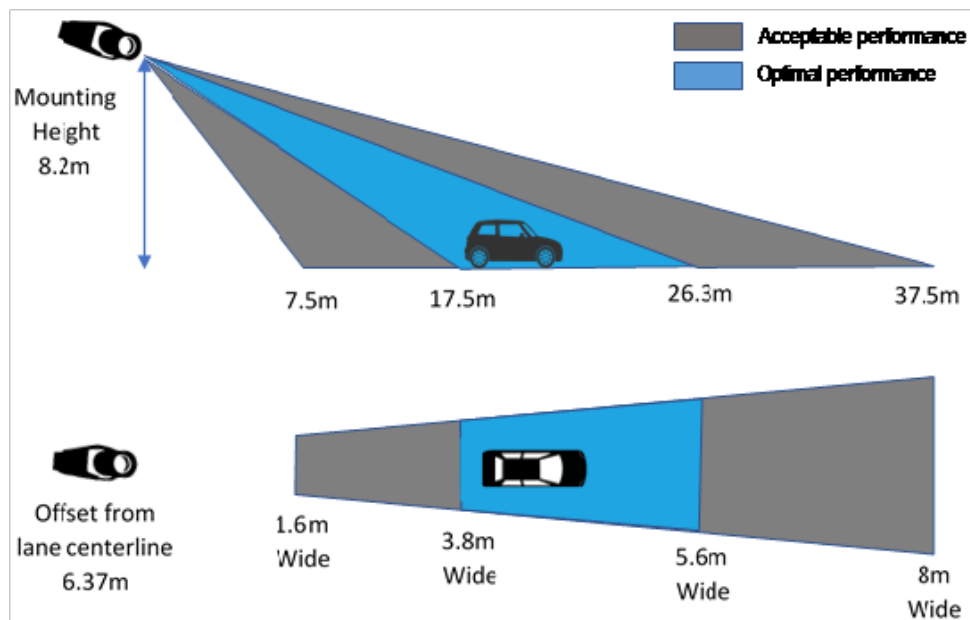
Pelco GFC IBP831-1ER 3840 X 2160, 20 fps, 260 kph, 162 mph

International Standards Organization
Registered Firm; ISO 9001 Quality System
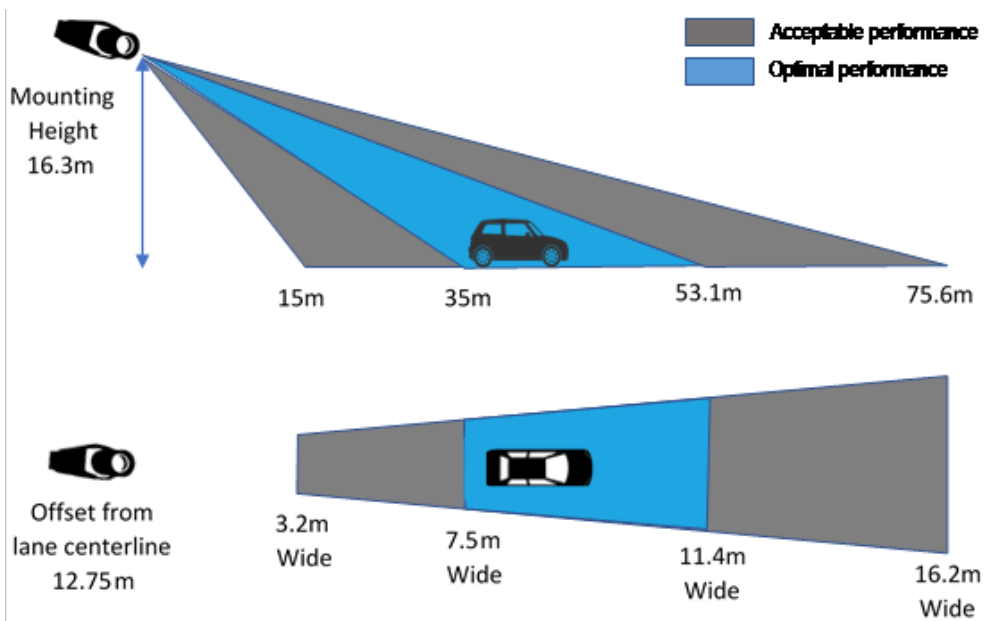
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