



## Bosch Video Management System integration with License Plate Recognition

Application Note



License Plate Recognition (LPR) systems are currently being deployed in many advanced surveillance installations throughout the world and are proving highly successful in security, speed-enforcement and access-control applications. They usually employ specialized infrared-sensitive LPR cameras capable of capturing the number plates of even fast moving vehicles in ambient light levels from bright sunlight to complete darkness. The numbers are then converted into a computer readable format and compared with a database of vehicle registration numbers. The LPR systems are

invariably standalone, often operating alongside CCTV installations but with little or no interaction between them.

However, following Bosch Security Systems' recent acquisition of Derwent Systems, a company with extensive expertise in license plate recognition, Bosch has utilized the powerful integration possibilities of its Bosch VMS (Video Management System) and developed a solution that allows Derwent's advanced REG-Sentry vehicle access control system to be added to the Bosch VMS.

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**Bosch VMS integrating security systems through IP**

The Bosch VMS manages all digital video and audio of an IP-based CCTV system, plus all the security data being transmitted across the IP network. It seamlessly combines Bosch's IP cameras and encoders, DVRs and Bosch Allegiant matrix systems. In existing Bosch systems, it can be used to supplement or replace the DVRs and Allegiant switches. It also incorporates many user-friendly graphical user interface features that make configuration and management simple. Through the Bosch VMS, it is also possible to seamlessly integrate CCTV systems with other security systems such as fire-alarm and intruder alarm systems plus Automatic Teller Machines (ATMs) and Point of Sale (POS) equipment such as cash tills and barcode readers.

The LPR camera is programmed to operate at shutter speeds of 1/1000 s to ensure the number plate images are captured at high contrast and high resolution. Dedicated LPR cameras also operate with infrared illuminators, with all visible light filtered out to eliminate problems of glare caused by headlights, sunlight and wet road reflections. Using high intensity infrared light also helps the camera capture dirty or obscured plates.

The LPR camera captures the number plate of any vehicle approaching an access-control point and transmits the data to the REG-Sentry control box, where it is processed and compared with the user-defined black/white list. The system then sends a signal to the access barrier to open or remain closed. The intelligent



Depending on the access rights of the approaching vehicle, the REG-Sentry system sends a signal to the access barrier to open or remain closed.

**License plate recognition with REG-Sentry**

Part of the new Bosch Derwent product range, REG-Sentry is one of the first automated vehicle access control systems based on LPR. The system can operate as either a standalone solution or integrated with other equipment. In addition, as a standalone solution the REG-Sentry can also be used over IP via XML messaging and RS232 to third party equipment.

Users can configure the system with specific number plate black/white lists, barring or enabling access to any vehicle attempting to enter a secure site. It offers a flexible, user-friendly solution for a wide range of access-control applications, including access roads, car parks, gated communities, factories, warehouses, ports, offices and schools.

The system comprises an LPR camera, a control box with an embedded processing engine and dedicated software to intelligently control traffic barrier applications.

processor in the control box converts number plate images from the camera to ASCII characters and appends date and time information. This data can then be monitored at the time of conversion via the RS232 output port of the REG-Sentry control box. The user's black/white list, which can contain up to 10,000 registration numbers, can be updated and uploaded with the system's easy-to-use Sentry-Viewer software.

**Monitoring REG-Sentry through the Bosch VMS**

Integrating REG-Sentry with a CCTV installation offers many advantages, from providing 'context shots' – photographs with a wider field of view to identify the make, model and color of the vehicles at the access barrier to, automatic recording of the entire scene at and around the barrier for a given time.

Such integration is possible using the Bosch ATM/POS Bridge. The bridge offers a range of functions including interfacing between REG-Sentry and digital video recorders like Bosch Divar and DiBos. This allows number plate data to be recorded and linked to specific camera images.

The ATM/POS Bridge in 'transparent mode' can also act as an interface between the REG-Sentry control box and a Bosch VMS system.

Once integrated into the network, the REG-Sentry control box output can be read by the Bosch VMS server to automatically alert the control room when, for example, a vehicle with restricted access approaches the barrier, and to display a CCTV image of the vehicle on one of the control room monitors.

In addition, each car's arrival is automatically recorded and the footage can later be retrieved from the CCTV storage device by a simple search action of the number or part of the number. In this way, every access or attempt to gain access is registered both in the REG-Sentry and as stored video in Bosch VMS to provide video evidence if it should become necessary at a later date.

**The total system**

The Bosch VMS – REG-Sentry integration therefore offers the best solution from both the number recognition and CCTV worlds. Providing:

- ▶ Fully autonomous access barrier control.
- ▶ Automatic live viewing option of access area on control room monitors.
- ▶ Option to raise CCTV alarms in the Bosch VMS system.
- ▶ Pre-set activation of cameras to observe the car park.
- ▶ Logging of every car arriving at the barrier with corresponding picture.
- ▶ Possibility to automatically record refused access behavior.
- ▶ Search and find video of any entry scene.
- ▶ Fully programmable follow-up scenarios.
- ▶ Possibilities to output events to third party software.

