

DATASHEET

GUARDIAN 704TKM

ANPR SOLUTION



Car plates & dangerous goods



GUARDIAN 704TKM

WARY thanks to the contemporaneous license plate and dangerous goods reading.

This solution provides useful reports for roads and tunnels safety, and the preservation of sensitive areas or terrorism target areas.

VERSATILE thanks to plenty of features that make it suitable for the use in different application areas.

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OCR CAMERA

3: it's the number of **integrated OCR algorithms** inside the camera for the recognition of PLATES and ADR tables (Kemler-UN) on vehicles transporting dangerous goods. This allows not only a high reading accuracy but also the maximum bandwidth savings.



ACCURACY

the actual valid data is accuracy expressed by a reading system when it is installed on the road, in various weather conditions (sun, rain, snow, fog, night and day) and when it has to read dirty or crumpled tables and plates. GUARDIAN provides more than 95% accuracy.

HIGH
DEFINITION

Global Proof uses megapixel sensor other than those used in standard cameras surveillance (30 fps). GUARDIAN uses special sensors with high frame rate (60 fps), Global Shutter type, to ensure a clear image (day and night).

HIGH FRAME
RATE

a good reading product does not use sensors for standard video surveillance cameras (Rolling shutter type). GUARDIAN uses special sensors with high frame rate (60fps) and high sensitivity Global shutter type to guarantee an increasingly clear image even in case of moving objects (especially in the dark).



VIDEO

GUARDIAN allows you to record both images (such as snapshot) and video clips of the vehicles passage and in addition, the video stream coming from the context camera. All this without interruption of the reading processes of ADR tables or license plate reading.



DAY & NIGHT

as in all good quality cameras, the sensor makes the difference. The use of megapixel sensors is not sufficient condition for obtaining a good quality and precision. Dangerous-goods plates reading requires high frame rate and sensitivity specialized sensors.

DATASHEET**GUARDIAN 704TKM****ANGLES**

Even knowing that the best results are obtained when the angles between the camera and the car plate do not exceed 40 degrees, we still worked to provide maximum operational flexibility for extreme cases, obtaining results with angles to the limits of legibility to the naked eye.

**OFFSET PLATES**

there are vehicles such as Alfa Romeos, trucks, heavy vehicles, presenting unaligned plates with respect to the center of the vehicle. Car plates reading systems usually do not tolerate these issues and often fail. GUARDIAN correctly reads any vehicle with off-axis plates.

**SPECIAL VEHICLES**

plate reading cameras by Global Proof offer a perfect license plate reading also of special vehicles, such as those of: Carabinieri, Italian Army, ambulance, Police, Ministry and special vehicles.

**BIKES AND MOTORCYCLES**

GUARDIAN can also read the license plates of motorbikes and motorcycles. This is useful for citizen security but also for applications such as access control or camping resorts.

**MAGIC SPOT LIGHT®**

unique function that makes a license plate readable even if the photographic image is dark and unreadable by the human eye. This feature makes the code reading immediate during visual inspections.

**ANTI-GLARE**

the high beam is a problem for many plate reading systems. The only valid system to solve this problem is to totally eliminate the visible light and illuminate the plate with infrared. For this reason the illuminator is a very important part of a good plate reading system.

DATASHEET**GUARDIAN 704TKM****ANTI
CREEPING**

The “creeping” of images prevents a correct characters reading. The phenomenon occurs with cameras with standard sensors (30 fps) in low light conditions. The solution is to use cameras with sensors at high speed (60 fps) of Global Shutter type.

**ANTI - DIRTY**

When a surface is perfectly clean, even the more “shoddy” reading system is able to read the codes. Too bad that in the real world we are increasingly coming to terms with dirty characters (especially in autumn / winter). Products by GLOBAL PROOF particularly stand in front of difficult characters reading on dirty surface.

**ANTI
OVEREXPOSURE**

In different times of year, the sun emits a high amount of light that put characters in overexposure. Using cameras with fixed, not adaptive illuminator means worse the situation. GUARDIAN solves this problem by using an intelligent auto-illuminator ranging from full power to switch off.

**ANTI - SHADOW**

Obscuring part of the Kemler/Onu code sharp shadows make up a real problem that invalidates recognition in many reading systems. Global Proof has cleared and solved this problem through the use of multi-exposure illuminators and anti-shadow algorithms.

**MULTI
EXPOSURE**

It is frequent to face sequential steps of track with dirty characters followed by other vehicles with gleaming ADR table or Car plates just out from the carwash. It is fundamental, in these cases, to possess cameras with powerful illuminators and pulsed to multi-exposure that adapt to the reflectance of each reading code in order to get the best result of reading.

**POWER
REGULATION**

The correct procedure to obtain perfect images is to regulate the power of the flash and the exposure of the camera, just as a good photographer would do. GUARDIAN rules the power output of the illuminator in automatic mode, operating also on the parameters of the sensor according to the lighting conditions in the environment and on the ADR table and Car plates surface.

DATASHEET**GUARDIAN 704TKM****SUPER EQUIPPED**

GUARDIAN is one of those rare products that offer the designer and retailer a wide range of accessories that can be combined and used together to best meet the needs of the project and market. The available accessories make unique the camera's functionalities, extending the concept of the product All-in-One.

**MEMORY CARD**

The camera GUARDIAN has a solid-state memory useful to save lists (white / black list) or images of the codes captured on board when problems of disconnection between the camera and the control center occur, never to miss a single reading.

**DOUBLE EYE**

One eye is not enough to do both things well. So we developed GUARDIAN and added a color sensor to resume the context. We offered two options: a low-resolution sensor with discreet night time sensitivity which provides excellent context images at 4CIF resolution and the advantage of saving bandwidth and storage thanks to Picture in Picture (PIP) or the image of the license plate inside the context image; the other is a high-resolution sensor which offers the advantage of recording and continuous surveillance.

**COMMUNICATION INTERFACE**

In addition to TCP / IP (Ethernet) communication, the camera is also equipped with serial RS232, RS485 and Wiegand communication interfaces useful for the integration of the device into any access control system.

**SWITCHES**

GUARDIAN has a relay with dry contacts to activate alarm signals or to open gates / barriers. Since the camera is a web-server you can virtualize the opening through buttons to be entered on the desktop of remote computers. Using white-lists in the internal memory GUARDIAN can operate as an automatic and independent stand-alone access control system (that is, without use of PC).

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Performance on the road

Pictures are worth 1000 words.

Original images taken by the camera **installed in the field**. Some characters were deliberately obscured in compliance with the Privacy Act. The images show the operation of Global Proof product most of the data and talk. We know to be good and **we want to prove** it not showing the usual readings of clean plates, but showing images of subjects that many products find very difficult to read. This is the result of much research and it is one of the added values that we offer!



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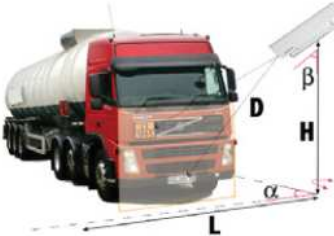



We are mad for read performances. We believe that our devices should do one thing that is, reading license plates and codes and we want them to work at their best, without compromise

DESCRIPTION	FEATURES
SENSOR	
Sensor	In CMOS technology - Global Shutter
Resolution	2 Megapixel – FULL HD
Frame rate	60 Fps
Lens	5-55 mm varifocal IR (standard)
CONTEXT SENSOR	
Lens	Color CMOS sensor with 752x480 WVGA resolution - Colors 1/4 " - Rolling Shutter with fixed IR manual and 12 mm fixed-focus lens - M12 joint
PIP function (Picture in Picture)	Ability to store plate and context image into a single image
CHARACTERS RECOGNITION - OCR	
Ocr for car plates reading and Kemler-UN codes	On-board integrated
Synchronous reading	Automatic (free flow) without the aid of synchronism apparatuses with contemporary reading of the car plate and the ADR table
Recognized characters sets	All Western (Latin): European, Canadian, American (USA), Turkish, Nigerian, South African and many more.
Syntax and nationalities (Syntax free mode)	No syntax limit and nationalities within the sets that the OCR can recognize (you can train the OCR to recognize any font). No limit bound to libraries.
Syntax filter	You can choose between modes with syntax - useful where there are well defined syntax (like Italy) - and without syntax (Syntax free).
Typology of recognized vehicles	Cars, trucks, law enforcement vehicles, ambulances and military vehicles, motorbikes and motorcycles
Recognized license plates	Front and rear
Recognized ADR tables	Front and rear; the front ones strongly recommended

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DESCRIPTION	FEATURES
OCR READING ACCURACY	
License plates OCR reading accuracy accredited by INRIM class A according legislation UNI10772	100% accuracy at a speed of 70 Km / h with a 60 ° angle. Accuracy of 94% with a 70 ° viewing angle: limit angle beyond which the characters overlap. <i>(Data of the test report on Global Proof OCR according to legislation UNI10772 certificated by the National Institute of Metrological Research (INRIM) accredited by the Ministry of Transport)</i>
OCR accuracy on road in all conditions	> 95% on license plate reading at speed of 160 Km / h > 90% on Kemler-UN tables reading - front plates - at speed of 120 km / h
DANGEROUS GOODS READING	
By law, ADR tables must be present on the front and side of the vehicle, while it is not mandatory that they are on the back. The rear tables are often found half-covered by elements such as ladders or pipes. Use the front reading.	
	Optimal geometry for the front license plate and Kemler table reading: D max = 20 mt H max = 4 mt L max = 4 mt β max = 20° α max = 30°
Width of passage	Lmax = 5 mt (useful framing is 4mt)
Capture Speed of ADR tables (free flow)	120 Km/h max - 80 Km /h Optimal
LICENSE PLATE READING	
The reading of rear plates allows the recognition of motorbikes and scooters at the risk of ADR tables loss. The reading of front license plate allows plates and ADR tables recognition but not motorcycles and scooters.	
	Optimal geometry for rear plates reading: D max = 20 mt H max = 4 mt L max = 4 mt β max = 30° α max = 30°
Width of passage	Lmax= 5 mt (useful framing is 4mt)
Capture Speed of license tables (free flow)	160 Km/h max - 140 Km /h Optimal

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DESCRIPTION	FEATURES
STANDARD ON-BOARD ALGORITHMS	
MAGIC SPOT ® algorithm:	one of a kind, which makes visible the plate body even when the photographic image is unreadable by human eye.
Dirt deleting algorithm:	to eliminate problems introduced by the deposit of materials such as snow, soil, dust, insects.
Video analysis algorithm that allows you to choose the best image among those obtained from multiple exposures.	
Angles compensation algorithm to allow readings even with very thrusts shooting angles (70 °)	
Symbols deleting algorithm such as labels, emblems, symbols or advertising signs	
Algorithm of predictive characters analysis , on a probabilistic basis, to increase the accuracy of reading	
IR ILLUMINATOR	
IR Led	No.12 IR Leds - High power
Type	It complies with EN 62471: 2008 on the photobiological safety (eyes)
Automatic power adjustment	Pulsed illuminator according to reflectance and illumination of the plate body
Exposure and lighting mode	Multi-Exposure: the vehicle is subjected to more flashes at each passage
Optimal distance lighting	20 mt (Kemler) - 20 mt (license plates)
Maximum distance lighting	25 mt (Kemler) - 30 mt (license plates)
INTERNAL MEMORY	
Type	<ul style="list-style-type: none"> • CF card solid state standard 128 MB • expansion up to 32 GB
Management	Automatic: images auto-delete (FIFO method)
VIDEO OUTPUT	
Video format with internal context camera (option D)	Mpeg4 - the camera is capable of delivering a movie at 15 fps of the vehicle passage, also during the OCR reading phase, without video interruption.
Video compliance	RTP / RTSP Onvif profile S
OCR image format	Jpeg – video and screenshot delivered at the same time







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DESCRIPTION	FEATURES
CAMERA INPUT	
Analog digital input for external context camera	Webserver / codec for external analog context camera PAL / NTSC. Who chooses optional integrated camera A cannot use this input.
Correlation between context image and car plate reading	Unique image containing reading + context images (Picture In Picture function)
DATA INTERFACE AND I / O	
Data transmission interface	no.1 RJ45 Ethernet port
Access mode to the camera	The camera is a web-server. It allows direct viewing of images, memory access, the parameter configuration through browser.
Standard interfaces	RS232-RS485
Optional interfaces	Wiegand, OSDP
Input	No. 2 digital inputs
Output	No. 1 dry contact (relay) or digital
GENERAL FEATURES	
Integration	The device can be integrated into the best known video management and video surveillance platforms as Genetec, Milestone, Tyco, Artec, etc.
Transmission protocols	TCP/IP, UDP, HTTP, RTP/RTSP, DHCP, FTP
Operating Temperatures	From -30 ° C to +55 ° C
Power supply	230 Vac or 24 Vdc on request
Absorbed power	10 Watt max
Dimensions (in mm)	W = 165; H = 122; D = 470
Weight	3 Kg
Casing	Powder painted die-cast aluminum
Protection degree	IP66 (standard); IP67 (on request); IK10 (on request)

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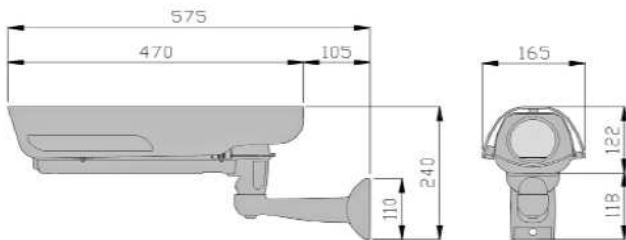
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DESCRIPTION	FEATURES
OPTIONAL	LEGENDA: GUARDIAN 704TKM ... (D I B S W O)
D- auxiliary camera 	CMOS color sensor, Rolling Shutter, WVGA resolution, 12mm fixed focal lens with M12 mount. As it does not have an IR filter, it is recommended to use it at day or in well-lighted environments only.
I- invisible illuminator 940nm 	Illuminator that is invisible to the human eye, realized with 940nm infrared LEDs: this frequency is undetectable and suitable for environments where discretion and privacy are needed.
B2- powering adaptor 	Change needed when you want to run the license plate reading camera (and the illuminator) in a 24 Volt battery (2x 12 Volt batteries). The illuminator is different from that of the standard version and designed to be able to tolerate variations in the supply voltage 20 to 28 Volts.
S- PoE switch 	Industrial POE switch, developed by Global Proof to be installed inside the camera; it is supplied with 3 LAN ports, of which one has a POE 802.3af output that can power any external IP camera or wireless/Gprs/Umts device using a single network cable
W- Wiegand 	The camera can be equipped with a Wiegand interface, that is useful for access control integration.
O- RS485 OSDP 	The camera can be equipped with RS485 interface with standard OSDP protocol, that is useful for access control integration in case of long distance connections

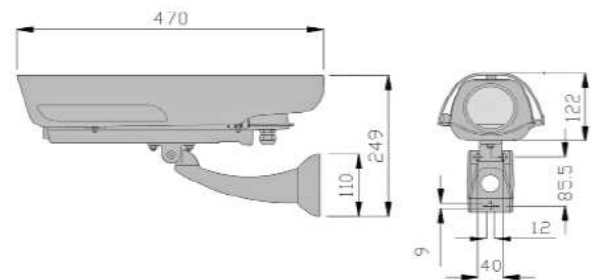
DATASHEET**GUARDIAN 704TKM**

Available in 2 versions:

cable managed



external cable glands



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SOFTWARE SOLUTIONS



As well as designing hardware devices, Global Proof develops software solutions, that are useful to provide customers with a turnkey package and full assistance service.

As we are manufacturers, we are always ready to modify existing solutions and customize them according to specific design requests.

GLOBAL PROOF PRODUCT INTEGRATION

One of Global Proof's goals is to make its products compatible with the different platforms in the market. GUARDIAN communicates using standard communication protocols such as RTP / RTSP and FTP for the video section and M2M XML for the meta data section. Together with these protocols, Global Proof has developed some SDKs and integration plug-ins for the most popular VMS platforms. Global Proof is always ready to provide technical support to anyone who wants to integrate GUARDIAN with pre-existing solutions.






CAR PLATE SERVER (CPS)

CPS is the software solution of Global Proof for city surveillance and for capturing the passage of cars, dangerous goods and containers.

This solution allows to:

- store the images of the license plates and those of the auxiliary camera;
- quickly search data by typing a small part of the license plate or wildcard characters only;
- send alerts if there are vehicles listed in external databases (stolen, foreign, uninsured, without a MOT certificate...) or internal databases (white or black lists);
- manage multiple lists and multiple users (also in the Cloud storage);
- show statistical analysis of the traffic;
- save bandwidth

More information are available in CPS datasheet.

PARKING MANAGEMENT (PAM)

PAM is the perfect solution for access control management. It is ideal for controlling private parkings, pay and display parkings, residential parkings.

This solution:

- allows access to authorized user categories only;
- allows to display and save the faces of the people who come in or leave the area, their vehicle data and description;
- allows free access to the area at specific times/days;
- assigns a preset number of license plates and parking spaces to each user category;
- allows to deny access to the parking when all the parking spaces are full.

VIDEO SURVEILLANCE (MULTICAM)

Multicam software solution, developed by Global Proof, is supplied with the camera in order to manage the images of the captured license plates. It is, at the same time, an easy-to-use and a complete solution and it allows to:

- store the license plates images in a database;
- instant search through even a small part of the license plate or wildcard characters only;
- record images or movies both of the captured plates and of the auxiliary camera that is connected to GUARDIAN via its secondary analog input;
- display images;
- manage lists with permissions (white list);
- manage lists of stolen license plates (black list);
- activate alarm events or warning alerts.

More information are available in Multicam datasheet.

Specifications are subject to change without notice, weights and dimensions are indicative.