GATEKEEPER
410X3 and 1250X3

Precision, speed and quality

Equipped with neural processing power the Gatekeeper 410X3 and 1250X3 multitask. They perform complex video analysis and communicate results to third party systems simultaneously, without the need for extra server capacity.

AVUTEC's specialized all-in-one visual sensor systems combine high accuracy license plate recognition with vehicle and situational image analysis to look beyond ANPR.

The IR sensitive sensor, IR LEDs and daylight filter ensure high accuracy LPR in all weather and lighting conditions. The onboard low light sensitive colour sensor and the neural processing unit pave the way for complementary deep learning tasks.

All image processing is done on device. Transmitting just the detection results as metadata ensures low bandwidth usage. Recognition continues even if Ethernet fails.

Features

Embedded ANPR engine to read number plates

AI boosted to run multiple video analysis algorithms in parallel

PoE+ enabled to simplify cabling and deployment

IR corrected varifocal lens (2-30 meters) for flexible positioning

IR LED illumination for day and night operation

IP66 rated enclosure for performance in all weather conditions and harsh environments

Toolset for full remote configuration and monitoring.

Benefits

Freedom of projection - The varifocal lens, the onboard LED illumination and PoE+ ensure freedom of projection and simplify positioning. The large ANPR distance, a 40° recognition angle and a versatile ANPR engine deliver unprecedented flexibility and cost effective installations.

Built-in interfaces and I/O ports - The Wiegand interface enables connectivity with any access control system or door controller. Onboard I/O terminals operate any gate, indicator or electronic peripheral.

Speed of recognition - Their on board versatile, high speed and accurate ANPR engine makes both models suited to capture license plates of free-flow and stop-and-go traffic

Integration and connectivity - The provided database-, FTP- and webserver- and webservice-module meet most integration demands. The scripting engine, specialised connector modules, the AVUTEC integration service and a developers SDK ensure connectivity and integration with any other system or interface.

IMAGING

IMAGING		
Sensor 1		
GK_410X3 and GK_1250X3	1920x1200 resolution, 25 fps, sequencing, monochrome, IR sensitive	
Varifocal lens GK_410X3	4 – 9 mm. iris, 2 - 12 meters*	max lane width 6 meters*
Varifocal lens GK_1250X3	10 – 32 mm. iris, 5 - 30 meters*	max lane width 6 meters*
Sensor 2		
All models	Low light sensitive camera 1920 x 1080 resolution, 30 fps	
Fixed lens GK_410X3	6mm	
Fixed lens GK_1250X3	12mm	
Daylight filter	850 nM IR band pass filter, small transparent eye (context camera)	

* Please note that the suggested conditions may vary depending on the specific circumstances under which the GK_410X3 and GK_1250X3 are installed. It is recommended to refer to the range charts for the GK_410X3 and GK_1250X3 to ascertain the advised operating conditions for these models.

ILLUMINATION

ILLUMINATION	
Wavelength	850nm
Illumination mode	synchronised with sensor 1
Illumination angle GK_410X3	90°
Illumination angle GK_1250X3	20°
Variable intensity	RAL9002 / costum colors possible
Bracket footprint	Conform WBOVA2, Videotec standard

ENCLOSURE

ENCLOSURE	
Measurements	305 x 192 x 72 mm (l x w x h)
Weight	2.43 kg
Material	Aluminium zinc alloy
Protection level	IP66
Color	RAL9002 / costum colors possible
Suncap	Cap to protect against direct sun light and rain
Bracket footprint	Conform WBOVA2, Videotec standard

AVUTEC

Gatekeeper datasheet

POWER	
Power supply	PoE+ (Plus), IEEE 802.3at, 25 Watts minimal at RJ-45 socket
Typical power consumption	17 W

PROCESSING AND I/O	
Processing units	• Embedded quad core 2.0GHz, 64-bit CPU • Multi-core NPU
Inputs/Outputs	2 x NOC / NCC potential free with Ext1, 6 x NOC / NCC with Ext2 I/O mod.
Communication port	1 x 10/100/1000 Base-T Ethernet port, Wiegand 5 Volt-level with GK_ext1

OPERATING CONDITIONS	
Max lane width	max 6 meters*
IR sensor	• 410X3: 0 - 100 km/h • 1250X3: 0 – 180 km/hr.
Operating temperature range	-18°C to 45°C environment
Max horizontal recognition angle	40°
Max vertical recognition angle	40°
Max tilting angle	10°

* Ask for the range charts to make an accurate projection

| DEEP LEARNING AND AI	
ANPR/LPR	Automated Number / License Plate Recognition
Detection, tracking, counting	Detection, tracking and counting of people, vehicles and other objects
Movement analysis	Analysis of movement for intrusion detection
Binary/multiple class vehicle classification	Binary: Detection of cars to detect unreadable license plates Multiple: Distinction between e.g. trucks, cars, bicycles and people
Segmentation	Segmentation of an image at pixel level
Pose estimation	The estimation of the pose of a person
Custom trained module	Neural networks or computer vision routines trained/developed by AVUTECs deep learning development service

IO EXTENDER for
410X3 and 1250X3

Hardware extender modules

The integrated and sealable junction box at the back of both models has a 6-pole connector, for I/O functions and 5 Volt DC power supply. Depending on the output configuration, different functions will be delivered on the feature connector pins:

1. Wiegand signal (carrying pass code number data);
2. Two output contacts (to switch external peripherals);
3. Six exclusive output switching table or
4. Custom / future specific input / output functions.

As a break-out data or switch module, **two different Extender modules** are available:

Module name	Description
AV_GK_EXT1	• A Wiegand interface 5 Volt level shifter / driver for longer cable lengths • Dual relays for two separate changeover potential free contacts
Inputs/Outputs	• Features 6 exclusively switched changeovers, potential free contacts. • Each can be connected as NO or NC contact.
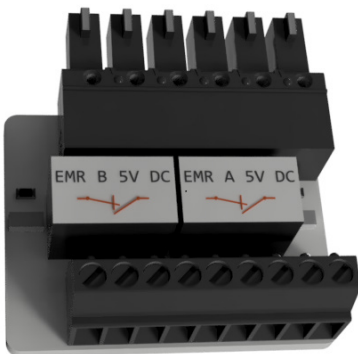
For every Wiegand cable to be connected to a Gatekeeper, the use of AV_GK_EXT1 is strongly recommended, as the D0 and D1 terminals are providing a 5 Volt level. This is the Wiegand standard and provides overvoltage protection. Especially longer length cables are only supported by the use of the EXT1 module, because of its high-power bus drivers for the larger capacitance value of longer cable lengths.

The potential free contacts of both Extender module relays can switch up to 250 Volt AC, 120 Volt DC loads up to a few Amps of current, although voltages well below 100 Volt is recommended. Otherwise, cascade a higher power relay with lower voltage coils. The minimal contact load is 100mA at 5 Volt DC. Use properly insulated cable when connecting higher voltage loads. Further normal miniature relay contact specifications apply.

The Extender modules can be controlled by trigger an action scripting within CortexFramework, so every thinkable application can be supported.

MOUNTING FLEXIBILITY
for **410X3 1250X3**

Horizontal and vertical angles from the Gatekeeper to the license plate

For the best performance it is advised to keep the horizontal and vertical angles as small as possible. Stated angles are maximum angles. For the best recognition each installation must be examined with care. Maximum angles are set according to the LED beam. Angles can be bigger during the day or in controlled light circumstances.

## Distance from the Gatekeeper to the license plate

Gatekeeper 410X3:   The distance to a license plate should never be more than 12 meters or less then 2 meters.
Gatekeeper 1250X3:   The distance to a license plate should never be more than 30 meters or less then 5 meters.

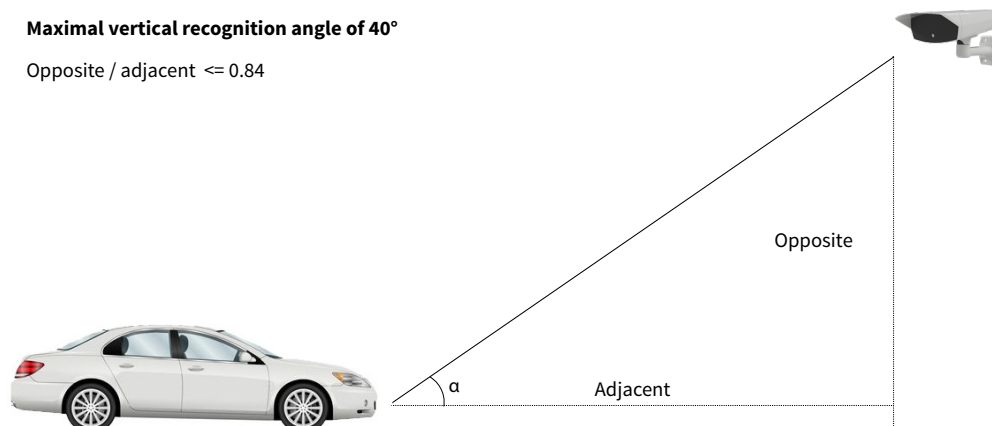**Maximal horizontal recognition angle of 40°**

Opposite / adjacent <= 0.84

A = Perpendicular axis to the license plate
B = mounting position of the Gatekeeper

B

Opposite

α

A
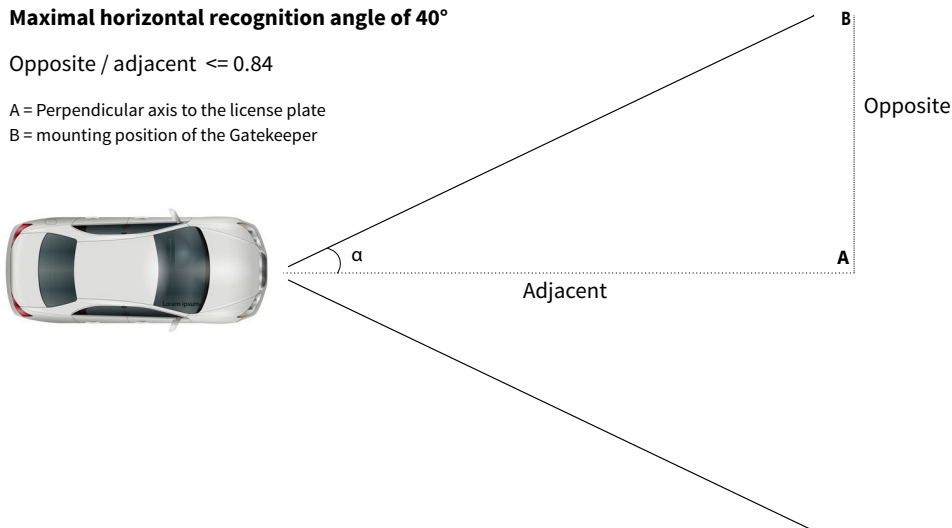
Adjacent

Maximal vertical recognition angle of 40°
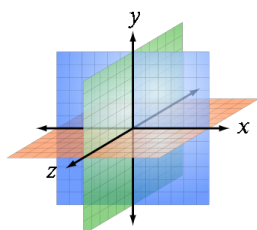
Opposite / adjacent <= 0.84

Opposite

α

Adjacent

TILTED ANGLES
for **410X3 1250X3**

Tilted angle of a license plate in the x & y axis plane

The ANPR engine recognizes license plates in angled positions in all planes. Information about horizontal and vertical angles is covered before. The license plate itself can also be tilted in the x & y axis plane. This angles can be 10° maximum.

max 10 degrees tilting in x-y plane