

**DEFSECUR**

Defense & Security

Verteidigung & Sicherheit

Ein Unternehmen der A.R.G.U.S. Security Group \* Sicherheit ist Vertrauenssache - Vertrauen ist A.R.G.U.S. Security

**YOUR PARTNER  
IN  
DEFSECUR**

**Defense  
&  
Security**

**Verteidigung & Sicherheit**

Professional Special Forces

- Crises Areas -
- Maritime Security -
- Personal Security -

Special protection vehicles

Ballistic protection

Security & Locating technology

Video & Monitoring technology

Fire & Instusion alarm systems

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## 1. Security Master



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## DEFSECUR Defense & Security - Security Master

**15 years of experience in the infantry elite troops – French Foreign Legion  
Fluent in English, French and German**

### Employment History

- 2013:** Maritime Security for **Delcro Security**, Germany  
Protection of the cruiser ship MS Astor.
- 2012:** Maritime Security for **Neptun Consult**, Germany  
Protection of the vessel MV Foresight in the red sea.  
  
Course on Maritime Security (Ship Security Officer – ISPS Code), STCW95  
And German weapon license for professional security (§ 7), Seaman`s book.
- 2010-2012:** Supervisor for Military Police in Libreville, Republic of Gabon.  
Training of 74 Military Policemen for the **Ministry of Defence** of the Republic of Gabon.  
  
PSD for **Page Security**, Haiti.  
Protection and ground transportation for members of UKAID/DFID in Port au Prince. After the earth quake.
- 2009:** PSD for **Lant Security** in Kabul, Afghanistan.  
Ground transportation and close protection for German engineers ( Voith Siemens )  
On water power stations outside Kabul.  
Security consultant for **Atlas Airline**, U.S.A. .  
Ground transportations and protection of crew members of Atlas Cargo Airline  
In Brazzaville (Congo) and Kinshasa (Rep.Dem.Congo).
- 2008:** Project development for Military Policemen training in Libreville, Republic of Gabon
- 2007:** Venue Security Manager and PSD for **Unity Resources Group Iraq**,  
Managing and training of 117 local Iraqi guards in a compound in Tikrit, northern Iraq
- 2005 – 2006:** Venue Security Manager and PSD for **Unity Resources Group Iraq**.  
Managing and training of 50 local Iraqi guards in a compound in Basra, south of Iraq  
C.P on convoys in Iraq.
- 2003 – 2004:** Team Leader, **Euoperations Ltd** – Managing a team of 4 guards responsible for the Security in an office building and in a private property in Monaco.
- 2002 – 2003:** Security guard and team leader, **ISEC, LONDON** – Responsible for the security in an office building and in private properties in Monaco and Cap Ferrat.
- 2001 – 2002:** Limousine driver and bodyguard, **Alcatel, Paris** – In charge of airport transfers and Paris Ground transportation for Alcatel management and clients.

## Military History

**1986 – 2001:** 15 years French Foreign Legion:

9 Years in the 2<sup>nd</sup> Foreign Infantry Regiment (2<sup>ème</sup> REI – Nimes)

- Leader of an infantry squad
- Leader of a reconnaissance squad
- Leader of a 120mm mortar squad

2 years in the 3<sup>rd</sup> Foreign Infantry Regiment (3<sup>ème</sup> REI – Kourou, French Guyana)

- Member of an infantry squad
- Member of a team for tropical and equatorial rainforest training

1 year in the 4<sup>th</sup> Foreign Regiment (4<sup>ème</sup> RE – Castelnaudary)

- Instructor of new recruits in basic training

3 years in the 1<sup>st</sup> Foreign Regiment (1<sup>er</sup> RE – Aubagne/Paris)

- Head interviewer of the French Foreign Legion information and recruitment office in Paris

Last rank: Colour Sergeant (Sergent chef)

**1980 – 1984:** 4 years service in the German armed forces.

Last rank: Colour Sergeant ( Stabsunteroffizier )

## Experiences

### Desert climates:

Saudi Arabia/Iraq (1990/1991)

- Desert shield

Djibouti (1992)

- Protection of French ground installations (ammunition storage sites, airport and Telecommunication sites)
- Evacuation of wounded somalian citizens from the somalian border to a hospital ship

United Arab Emirates (1992)

- Training of Emirate soldiers on French weapon systems and materials

## Tropical and equatorial rainforest climates:

### French Guyana (1987 – 1989)

- Control and monitoring of high risk zones (Ariane rocket launch area)
- Tropical and equatorial forest training
- 3 to 5 week foot and river patrols in virgin forest (re-establishing of border markings and River controlling to protect against smuggling and illegal immigration in cooperation With French border police)

### Republic of Central Africa/Zaire (1991)

- Installation of check points for people, merchandise and luggage
- Reception of evacuation of French and Belgium citizens out of Kinshasa
- Protection of the French Embassy in Kinshasa

## Others:

### Ex-Yugoslavia (1993 and 1995)

- Escort of humanitarian convoys
- Restoring and maintaining law and order under command of the United Nations

### France

- Recruitment and selection of volunteers seeking to join the Foreign Legion (800 candidates per year, 126 nationalities)
- Instruction and training of men in sports, technical and tactical disciplines
- Fire fighting and protection in the South of France

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## Professional Diplomas

**2000:** French ground forces specialist`s diploma (Motorizes Infantry and Heavy Mortars)

**1979:** German professional carpenter diploma (3 years professional training in a carpenter school)

**2012:** Ship Security Officer and German weapon license

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## Other

Languages: English, French and German – all fluent

Computer skills: Word, Excel, Windows, Internet

Driver`s licences: Car, truck

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## Hobbies

Boxing and martial arts

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## **2. Face Detection** **License plate detection**

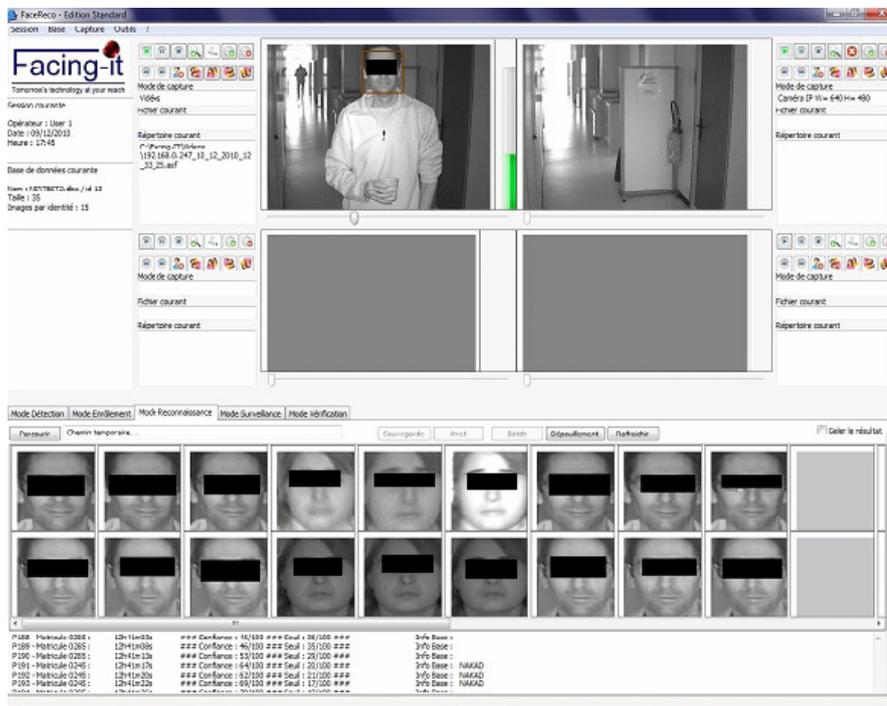


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## Face Detection and Recognition



### FACE DETECTION

FaceReco contains state of the art algorithms for:

- Multiple face detection
- Face tracking
- Eye detection
- Mouth detection

In addition the software includes built in and custom stream capturing from video files and live cameras and is compatible with Milestone X-Protect and Geutebrück Geviscope

### FACE RECOGNITION

FaceReco provides state of the art algorithms for:

- Controlled face recognition
- Nominal face recognition
- Covert face recognition

In addition the software provides functions for alert generation upon suspect recognition using SMS, email, visual or audio modes.

Facing-IT provides you with an efficient, easy to deploy, face recognition solution for enrollment, one-to-one and one-to-many matching. The FaceReco software contains modules for face finding, template creation, quality analysis, watchlist searches and alerts packaged in a simple windows 32 application. The software can be seamlessly integrated into existing applications as well as in completely new application development and is compatible with Milestone X-Protect and Geutebrück Geviscope.

FaceReco is intended for PC-based biometric application development. It includes state of the art face detection, tracking and recognition on static pictures on live streams, and in videos,

The software is developed for Microsoft Windows platform. It is tested on Windows Vista, Windows XP, and Windows 7.

Sample applications and documentation are included in the package. Additional interfaces and samples can be provided on request.

The FaceReco software supports multiple detection and recognition algorithms and works with either static images, video files, or live camera streams. Additional functionality is provided for eyes detection, mouth detection, facial contour cropping, forensic face reconstruction, and alert generation

**LIVE PROCESSING**

The software is capable of processing live camera streams for real-time face detection, tracking, and recognition.

**OFFLINE PROCESSING**

The software processes video databases in offline mode for automatic face detection, recognition and video database indexing

For more information on any of our products or services please visit us on the Web at: [www.facing-it.com](http://www.facing-it.com)

## Technical Specifications

- Platforms Supported: Microsoft Windows XP, Vista, Windows 7; Linux version available through special requests.
- Image Input Formats JPEG, JPEG 2000, BMP, GIF, PNG files
- Video Input Codecs : MJPEG, LJPEG, H261, H263, MPEG1, MPEG2, DIVX MPEG4, XVID MPEG4, RV, WMV
- Input Cameras : MJPEG encoded IP cameras, Axis brand
- Supports inputs from Milestone XProtect
- Supports inputs from Geutebrück Geviscope
- Robustness: The algorithm compensates for natural variability in the face such as expression, facial hair, and hairstyle.
- Lighting : The algorithm is robust to changes in lighting conditions, and does not require additional light normalization
- Eyeglasses: FaceReco uses multi-input enrolment to match faces with or without eyeglasses.
- Background: FaceReco finds the faces in an image against any background, plain cluttered or in crowd. Recognition performance is unaffected by the background.
- Image Resolution : Minimum IOD of 40 pixels
- Race and Gender: Performs well on all races and both genders.
- Partial occlusions and disguise: Forensic face reconstruction matches and reconstructs occluded or disguised faces

## Pack Includes

- Facing-FaceReco  
Contains the elements that encapsulate Facing-IT technology and its supplemental functionality, including face detection, face tracking, facial feature finding, quality analysis, template creation, verification, identification, watchlist searches and alert generation.
- Media Processing application  
A module integrated to FaceReco that allows capturing of video files and IP camera streams. Supports frame capture from .avi .mpeg .flv .mp4 .asf, .wmv, and ts files,
- Software Documentation

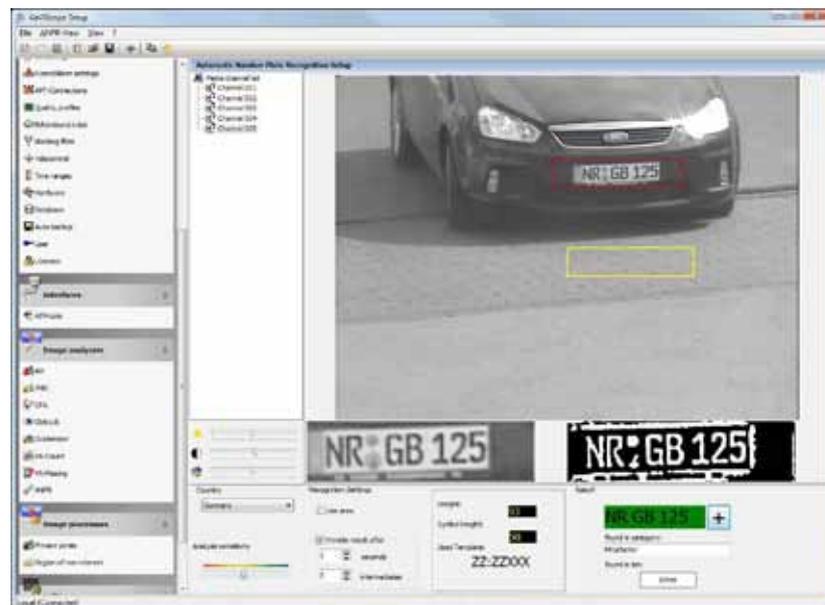
**DEFSECUR FEATURES**

[Face Database Creation](#)  
[Face Detection](#)  
[Face Tracking](#)  
[Facial Features Detection](#)  
[Identity Enrolment](#)  
[Identity Verification \(1:1\)](#)  
[Identification \(1:N\)](#)  
[Suspect Recognition](#)  
[Alert Generation](#)

# ANPR – Number Plate Recognition



Number plate recognition for access control and similar applications



## Product information

The picture data of the selected channel are analyzed for number plate information according to parameter settings and country code. If a number plate is recognized, the corresponding metadata are assigned to the image in the picture database for later analysis. Every available channel under GeViScope and re\_reporter (analog or IP) can be used for the number plate analysis. The number plate data are stored in the system, categorized and saved in a black/white list. Depending on the category and black/white list assignment of a recognized number plate, flexible, configurable system actions can be triggered.

- | Qualifies picture data via number plate information
- | Database search using number plate and metadata
- | Accurate recognition at speeds up to 100 km/h
- | Detection accuracy > 96%
- | Control of access gates etc. in parking lots, loading zones, property entrances, etc.

# Technical data

<b>Monitoring area</b>	Detection area freely definable.
> Set-up options	Simultaneous recognition of up to 4 vehicle number plates within an image. Specification of the typical size of the visible number plate as frame.
> Set-up aids	Display of the active detection area in the live picture. Display of the expected number plate size in the live picture.
<b>Alarm analysis</b>	Analysis in real time. Comparison with black/white list. Comparison with category assignment.
> Set-up options	Adjustable time/number of pictures whose individual measurements are analyzed per number plate recognition procedure (statistically). Maintenance of the black/white list with up to 1,000 entries. Maintenance of the category list. Assignment of the number plate to category and black/white list manually or according to recognition procedure. Optimization of the analysis by adjusting contrast, brightness and color saturation.
> Set-up aids	Display of the original picture with markings of found number plates. Display of analyzed section of the picture as black/white picture and binary picture. Display of the recognized number plate in plain text incl. black/white assignment and category assignment. Feedback regarding effects of the settings for contrast/brightness/color saturation on the analysis reliability via the black/white and binary pictures output by the algorithm.
<b>Installation configurations</b>	Max. horizontal angle between camera and vehicle axle: 20° Max. vertical angle between camera and vehicle axle: 30° Max. vehicle speed: 100 km/h Min. vertical resolution per character: 10 pixels Typical recognition rates > 96% under optimal conditions
<b>Operating system</b>	Windows 7 embedded 64Bit
<b>Camera channels</b>	
> analog	Supported
> IP	Supported
<b>Order no.</b>	<b>8.31235</b>

The currently supported country codes are: Australia, Austria, Belgium, Bulgaria, Belarus, Switzerland, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, Greece, Hungary, Italy, Kazakhstan, Lithuania, Luxembourg, Latvia, Morocco, Netherlands, Norway, New Zealand, Poland, Portugal, Romania, Russian Federation, ex USSR, Slovakia, Slovenia, Sweden, Turkey, Ukraine, Uzbekistan, South Africa. Additional countries on request.

	VMD	AD Basic	AD Extended	Dual-Sensor	VA-Class	ANPR	VA-Missing	Audio AD	CPA
GeViScope-HS	○	●	○	○	○	○	○	●	○
GeViScope-IP/SE	○	●	○	○	○	○	○	○	○
re_porter	-	●	-	-	-	○	-	-	○
re_porter_sensor	○	●	-	○	○	○	-	-	○
re_porter_bank	-	●	-	-	-	○	-	-	○
MultiScope III/XP	-	-	●	-	-	-	-	-	●

●= Standard ○=Optional --=Not available

Please take into account that video analysis applications require extensive project-specific consultation. For an optimal result, numerous environmental conditions and system parameters must be considered. Our specialists are happy to provide you with assistance! We guarantee simultaneous analysis of four (re\_porter) or six (GeViScope) D1 (4CIF) resolution video signals on the local device without interfering with other functions. Exception: AD and VMD licenses for analog cameras and CAM2IP and VIPCAM can also be operated without restrictions.

## Battle area clearance

### Active and passive detection solutions for analogue and digital surveys

- Humanitarian Mine Action
- Survey on Explosive Remnants of War (ERW)
- Underwater Explosive Ordnance Disposal (EOD)



## Ebinger Germany

EBINGER has specialised for over 40 years in the development of handheld search equipment for a wide range of applications. The company originated in German bomb disposal, where Klaus Ebinger introduced improved detectors already 40 years ago. This technology was successfully sold worldwide soon after.

The EBINGER brand became synonymous for a large number of inventions and trendsetting innovations.

We focus on the protection of property and the safety of people exposed to acts of terror and the remnants of war.

SEARCH and LOCATE is our slogan. The continuous dialogue with our customers and users is essential to us to advance in research and development of new devices and technologies for difficult search operations.

## Explosive remnants of war

The remnants of war do not inflict injuries and end life indiscriminately long after the gun have fallen silent, in more than 70 countries they impede the social and economic recovery, prevent the return of internally displaced persons and deny access for humanitarian aid.

Despite the fact that more than 140 Nations under-signed the Ottawa convention of 1997 progress in the removal of ERW is slow. We stay abreast of the technical requirements in the different munitions clearance programs by investing lavishly into R&D and supplying a rich portfolio of equipment to speed up work progress and to improve productivity at affordable cost. Technology-wise we adapt to the procedures developed by the organizations, such as UNMAS and GICHD, just to name a few.



## EBEX® 422 GC

### High performance all terrain metal detector

- Wide band soil compensation
- High detection sensitivity
- Robust, modular construction

The EBEX® 422 GC represents the latest version of the 420 series providing improved detection range and sensitivity. It offers a dynamic and a static operation mode to match different working conditions. The innovative EBINGER PI-technology allows for an audible distinction of the object character and precise pin-pointing of targets. Objects such as an A/P72 a, M14 or SB 33 can be distinguished from iron fragments or mortars due to differing audio alarms (rising /dropping frequency). This allows a high resolution of the targets even if buried at close distance to each other. The new sensor shape causes a detection footprint of the search head which is similar to a curtain. This assists to avoid a missing of minimum amount of metal targets which may be buried at critical depth and with an offset to the search head centre. It also improves productivity as it reduces the usual overlap of the detector head scan zones.

- Interchangeable components
- No cable links to operator
- Clear signals

The productivity of the equipment depends mainly on three characteristics:

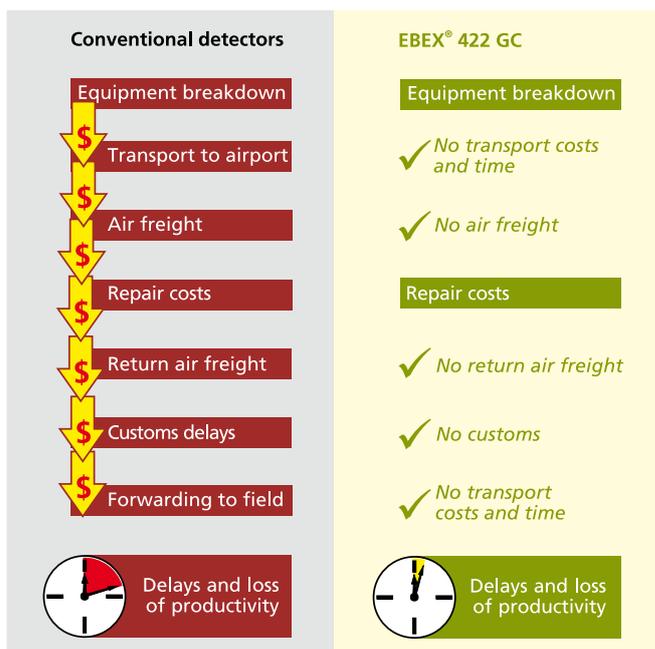
- detection performance
- procurement & operation cost
- field availability

Reliable high detection performance relates to equipment which achieves a safe, pinpoint detection of targets under adverse conditions and which produces a large number of screened square metres. EBEX® 422 GC meets these requirements.

Procurement cost is low when seen in conjunction with the exceptionally long service life cycle of the equipment and its versatility in MineAction. Operation cost is particularly low due to the option of using fast charge NiMH batteries (5 h) and solar charging systems. The modular design supports a cost saving logistics and self sustained service with shortest turnaround time and exceptionally high equipment availability on the work site.



EBEX® 422 GC, most advanced detector for minimum amount of metal mines



Cost benefits from field service of the EBEX® 422 GC in comparison to the breakdown costs of conventional detectors

## EBEX® 420 H

### Metal detector for co-operative ground

- Most easy to use – 1 knob operation
- Compact, lightweight, durable
- Large temperature range
- S-version operating from solar power

Compact handheld metal detector in continuous wave (CW) technology for detection of unexploded ordnance (UXO) and shallow buried „minimum amounts of metal“. It is a single-piece tool without external boxes or cables. The operation is simple with minimal operator fatigue and enhanced safety precautions. It is designed as a lightweight and easy to use tool for operators without advanced training.

The EBEX® 420 H is operated by one control knob and automatically adapts through its dynamic search mode to homogenous background interference. It can be used on cooperative and mild interfering soil.

The EBEX® 420 H can be used in long or short-mode for the prone position or standing. Available with integrated solar power supply.



EBEX® 420 H solar version

## TREX® 204 M

### Metal detector with soil compensation for difficult terrain

- Small dismantled size
- Versatile charging system
- High detection sensitivity
- Clear signals
- Ground compensation

The TREX® 204 M is a modern variant of the EBINGER „hockey stick probe“ that was first put to use for the detection of explosive ordnance 40 years ago. The new and further developed probe concept of the TREX® 204 M (as accredited by BH-MAC) permits a pinpoint location of metal objects which are concealed in stony terrain that is difficult to inspect, in furrows and trenches, channels or beneath undergrowth.

Even when used in adverse working conditions, users cherish this detector because of its outstanding detection properties on mineralized and only partially co-operative ground and for its good balance. In humanitarian mine action the TREX® 204 M supports the detection of landmines with low content, which are concealed close to the surface. UXO which is buried down to 50 cm, can also be detected depending on size and local working conditions. Typical search tasks that arise in forensic police work as well as in archaeology and geology are also significantly facilitated by the detector's pinpointing properties and clear signals.



TREX® 204 M in test bed

## MAGNEX® 100 B Iron locator

- Robust and handy
- Lightweight
- Simple to use
- Audio coding of field polarity
- Dynamic /static detection steps

The MAGNEX® 100 B is a handy iron locator in long-term stable and innovative differential probe technology.

It detects magnetic anomalies in the normal magnetic field of the earth as caused by buried ferromagnetic objects. The detection range of the MAGNEX® locator depends on the size, position and magnetic signature of the objects to be detected.

Two dynamic detection steps are foreseen for fast subsurface localization of ferromagnetic parts. In this mode continuous magnetic interferences e.g. mineralized soil or fences can be suppressed to certain limits.

The MAGNEX® 100 B is a bar-type device containing sensors which are connected in differential mode, an electronics and the battery compartment.



MAGNEX® 100 B, handy magnetic anomaly detector

## TREX® 210-3 System HASI Hand held metal detector for humanitarian mine action

- Compact, robust, handy
- High detection sensitivity
- High electrical stability
- Ground compensation (GEB)

EBINGER metal detectors are world renowned and proven in the field of humanitarian mine action. The development of TREX® 210-3 is based on the awareness, that in case of cooperative and non-cooperative soils the CW operation offers specific advantages compared to the PI technique (measurements in time domain):

- No loss of efficiency on time-wise indifferent reacting mine types
- Ground compensation without time-wise disadvantages
- Higher detection sensitivity
- Indication without time constant
- Faster searching
- Precise pinpointing
- Low power consumption



TREX® 210-3 System Hasi

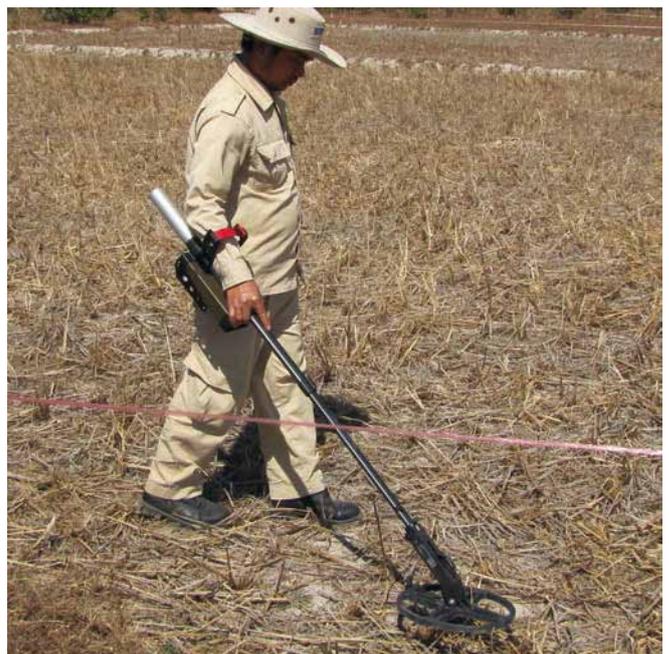
## PIDD® PI UXO detector

- Pulse induction (PI) principle
- Operation on mineralised and magnetic soil
- Dynamic search mode
- LED battery control

The PIDD® detector is based on the EBINGER PI-system and applies the PIDD® method / system which consists in a favourable decoupling from soil magnetic effects such as on non-cooperative ground. Interference from alternating electric fields resp. EMI is clearly reduced. The interference from metal fragments can be reduced by switchable delay times to such an extent, that productivity in BAC is substantially improved.

The device is based on the EBINGER PI-system and was designed to maintain a good detection range on compact UXO such as BLUs and similar without showing excessive sensitivity to the large number of metal fragments from exploded submunitions and mortars.

The equipment comes with an adjuster to easily optimize the detector for different tasks and operations reducing the cost for clearance and operator fatigue at the same time



*PIDD® detector in BAC operation in Vietnam and Lao*

## UPEX® 740 M

### Large loop metal detector – improved!

- Deep search
- High productivity, up to 2,5 ha /day & unit
- Data output, ideal for survey and QA/QC

Large Loop Pulse Induction metal detector for BAC. The UPEX® 740 M is an ideal tool for the subsurface search on UXO and to survey large areas. The support frame for the sensing loop can be assembled in a 1m x 1m shape or 2m x 1m. The device has become a 'work horse' in BAC tasks as it is easy to use and to train and providing a much larger detection range on medium or large sized munitions than standard PI detectors. UPEX® detects ferrous and non-ferrous metal objects. In adequate terrain it can inspect up to 2,5 ha/per day and machine.

To improve work progress even further the UPEX® is equipped with a DELAY adjuster. This feature serves to desensitize the search equipment selectively against small metal scrap and unwanted fragments from exploded ordnance.

Target acquisition is indicated in realtime by an audio alarm and a galvanometer or a watertight and shockproof LED bargraph.

- For use on water and on land
- Detects ferrous and non-ferrous metal
- Data loggers and rich accessories available

For a digital survey detection data/results can be recorded by means of the EPAD® Datalogger. The detection data can be downloaded later onto a laptop or PC for processing and visualisation by the EPAS® software. This version meets the requirements of GIS systems and greatly supports QA/QC and ISO 9000 alike QM systems.

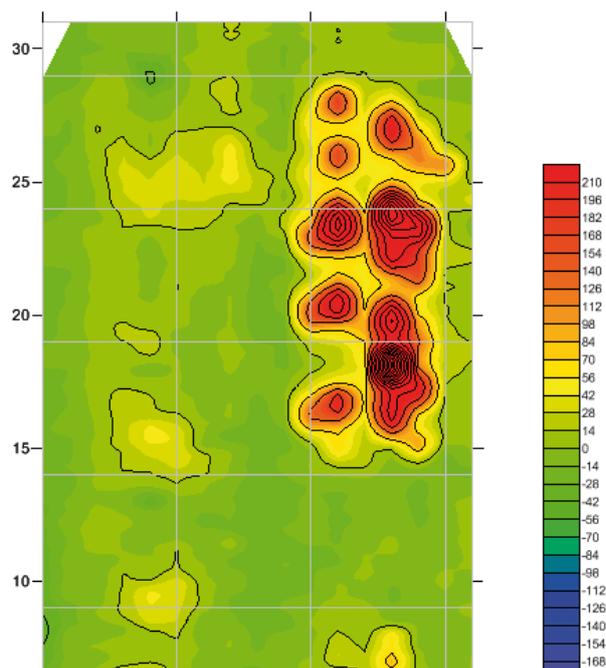
UPEX® 740 M is by far simpler to use than magnetic anomaly locators and compares in most features to a standard metal detector. Detection signals are easy to interpret and no advanced training is required for the operators. UPEX® can be operated by two or by one operator, depending on the accessories chosen.

The system is available in single loop or multiple loop configuration and can be operated as hand held unit or from a vehicle platform.

The search loop is watertight can be operated in or on shallow waters.



UPEX® 740M, UXO locator operating in Iraq



Colour-map from AEM survey

## MAGNEX® 120 LW

### Magnetic anomaly locator

- Land-, water and borehole use
- Robust and reliable
- Ergonomic design
- High sensitivity and detection range

MAGNEX® 120 LW represents a highly sensitive but robust magnetic anomaly locator for the detection of ferrous objects. It is applied to locate air delivered unexploded ordnance of substantial size buried correspondingly deep in the ground. The locator is in use worldwide and has become a standard tool in bomb disposal units. It operates as a differential fluxgate device measuring local changes in the magnetic field of the earth which can be caused by the remanent magnetism of iron objects.

The LW version comes with a detachable probe and will suit in-water use and borehole inspection. For such tasks the probe is connected via an extension cable with integrated traction relief. MAGNEX® 120 LW can be used as single channel hand held locator, as triple probe hand held device or as multi-channel version operated from a vehicle platform.

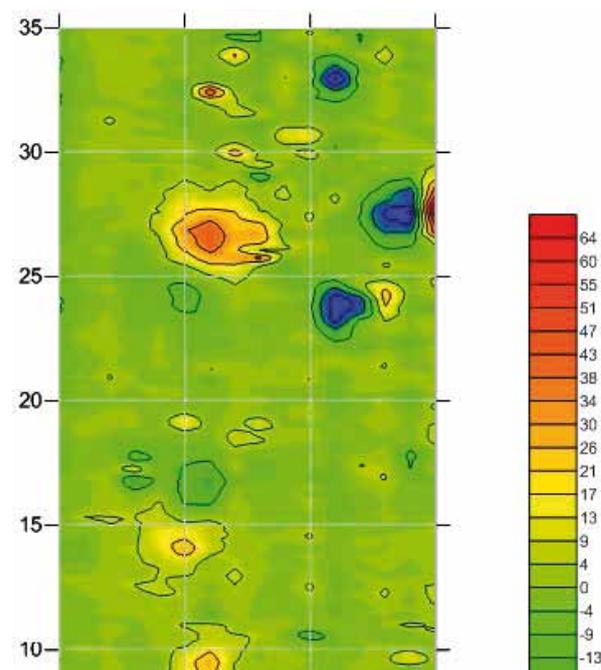
- 6 sensitivity ranges to adapt to any task
- Mag and flag operations
- Digital surveys with single or multiple sensors

The device is lightweight and robust. It can be field serviced when required. Even if used in a conventional analogue operation MAGNEX® 120 LW allows to resolve even fine changes in the magnetic field which may be as small as 0,5 nT only. The locator suits also for a digital survey if the detection data is stored in an EPAD® datalogger and downloaded to a PC for later processing and visualisation by the EPAS® software.

The combined use of MAGNEX® 120 LW, EPAD® and EPAS® meets the latest requirement for GIS and Information Management Systems in Mine Action. It will also support an ISO like QM system and ease quality assurance and quality control as trouble spots can easily be relocated and inspected.



MAGNEX® 120 LW, state of the art magnetic anomaly locator for deep search



Colour-map from magnetic survey

## MAGNEX® 120 LW Multi array systems

- Substantial increase in productivity
- Easy and fast to assemble, handheld operation
- Single and multi-channel configurations
- GPS options

For improved productivity and data quality in subsurface search EBINGER offers multi-channel systems which apply several MAGNEX® 120 probes. The carrier system TR01-03 can take 1 to 3 MAGNEX® 120 probes, which are fitted at a spacing of half a meter distance.

This triples operator efficiency and produces enhanced detection data quality due to the firm spacing between the sensors. The carrier incorporates a power supply for the sensors and is lightweight to avoid operator fatigue. The carrier can come with or without wheels.

The average daily survey result is approx. 2 – 3 hectares. By means of an extension set 'TR01-05 UPGR' two further probes can be added so that the system applies a total of five sensors. If the probes are fitted at a spacing of 25 cm the data quality will be excellent.

The TR02-05 carrier covers a width of two meters. It is supplied with wheels. Productivity is approx. 3 to 4 ha/day. Upon request a 4 m wide multiple probe trailer system can be supplied. This boosts productivity even further. In previous operations 12 ha/day were achieved where the terrain allowed the use of a wheeled system.



MAGNEX® 120 LW Three-channel-array system



MAGNEX® 120 LW Four-channel system

## EPAD®/EPAS®

### Ideal tools for geophysical survey and QA/QC

#### Data recording system EPAD®

- Easy to use interface for basic users
- Ruggedized PDA meeting of MIL-STD 810 F
- Removable memory stick for exchanging data between field and office
- IMSMA supporting, GPS-compatible (NMEA 0183 protocol)
- Available in numerous languages

EPAD® data logger and EPAS® are a perfect match for recording, processing, visualization and evaluation of survey data. This system is very easy to use and can be supplied with multilingual resources and fonts.

The EPAD® data logger can be operated as single channel or multi channel system allowing up to six data ports for technical surveys or QA/QC. in the field. Its hardware is based on a ruggedized mil. spec. PDA which meets the demanding requirements of MIL-STD 810 (temperature, shock, dust, vibration, humidity).

#### Data evaluation and visualization system EPAS®

- Easy to use interface guides user step by step through all processing tasks
- Preprocessing of data: correction of data offsets and track shifting errors
- Visualization of data: color maps, contour lines
- Calculation of targets from magnetic and electro-magnetic data
- Available in many languages
- Operates with Microsoft® Windows XP or Microsoft® Windows Vista

The EPAS® software allows the user to focus on the visualization and evaluation of data as it performs complex data preprocessing automatically in the background: this makes the system an ideal tool for battle area clearance tasks and as data collection can be carried out by a non technical workforce while data interpretation and decision making remains in the hands of EOD specialists. The introduction of an ISO alike quality management system will require the storage of forgery-proof detection results. The EPAD®/EPAS® system fullfills such requirements and is well proven.



Mapping with analysing software

## UPEX® 745 P2I

### Metal detection system for BAC and deep search in urban areas and industrial estates

- Suits on-surface and borehole operations
- Optimization for different detection tasks
- Large detection ranges and high sensitivity
- Large detection range, extended lateral sensing range significantly improves the gain from borehole tasks
- Cost reduction due to reduced number of boreholes
- Digital analysis of transients (analysis of decay curves over a long period [30-1500  $\mu$ s]) allows inspection on object specific signatures

The new UPEX® 745 P2I system offers unique advantages in subsurface search due to its flexibility and the wide choice of transmitter and receiver components. The UPEX® 745 P2I can be optimized for different tasks and operations. It suits for standard on surface usage as well as for borehole inspection.

Due to an improved decoupling from the inspected medium the typical interference from soil magnetic effects (i.e. basalt rock) can be suppressed. Therefore unwanted signals from small scrap can be eliminated. In comparison to conventional magnetic surveys it

- Improved decoupling from inspected object, therefore suppression of interference from soil magnetic effects (e.g. basalt rocks) and scrap
- Diversified application, suits surface detection and borehole inspection
- High coverage of areas
- Flexible system, option for various transmitter and receiver loops

allows much larger grids with substantially fewer boreholes. This reduces cost, improves revenue even when submitting very competitive offers. The productivity increase of the UPEX® 745 P2I technology will certainly have an extra impact on business development as clearance tasks, which were far beyond available budgets before, could now come under consideration.



UPEX® 745 P2I receiver loop during measurement work



Modular setup of UPEX® 745 P2I with various search heads and rich accessories

## UPEX® 740 MVM

### Vehicle based single and multi array systems

- Substantial increase in productivity
- Easy and fast to assemble, simple logistics
- Single and multi-coil configurations

EBINGER offers diverse sensors and search systems in handheld or wheeled version meeting the different operational requirements.

The large loop metal detector UPEX® 740 is the basis for a number of vehicle-supported multi-array systems, which improve productivity and data quality in large area surveys.

The UPEX® 740 MVM multi-channel vehicle system is very effective for the inspection of wide areas and fast road opening. The multi array version can take up to 8 sensor loops to scan a large surface. The alarm system of the electronics can be pre-adjusted to alarm only upon detection signals which exceed preset values. This is to cancel unwanted detection signals resulting from surface bound scrap metal. Optionally the UPEX® 740 MVM can be equipped with a paint spray system to mark the areas where relevant detection results were obtained.



*UPEX® 740 MVM triple system used in road inspection*

## UWEX® 725 DW

### Underwater metal detector

- New EBINGER underwater PI system
- For professional use
- Simple operation and rugged design
- Large detection range

The UWEX® 725 DW offers important advantages compared to conventional technique relieving the diver and improving productivity noticeably.

Small scrap can be faded out electronically via various sampling delay steps. The detector can be programmed to large objects so that interfering metal parts of other time constants are faded out to certain limits. This helps to save time during underwater search improving return on investment.

The detector suits for operations in fresh and salt-water as well normal landuse.

The electronic design incorporates a compensation of mineralized soil. Accessories: connectable vibration alarm, audible under water!



*UWEX® 725 DW new UW PI system*

## UWEX® 722 C

### Professional & handy underwater metal detector

- Compact, sturdy, handy
- High sensitivity
- Simple to use
- Detects ferrous and non-ferrous metals
- Static search mode
- Adjustable object suppression

The UWEX® 722 C is foreseen for the detection of metal objects buried underwater and in the river/seabed. The device operates on the pulse induction mode and can be applied in fresh water and in saltwater down to a water depth of 60 m.

Target pinpointing is easy due to clearly audible signal with large frequency deviation by pressure waterproof headset.

## UWEX® 725 K

### Professional UW metal detection system

- Versatile, rugged modular design
- Underwater and normal land use
- Various search heads and large loop available
- Static search mode
- Audio and LED detection signal
- Audio function monitoring

The UWEX® 725 K is a consequent further development of the well-proven UWEX® 715 detection system. It can be supplied with different search heads and an underwater large loop. It suits for the location of objects with a minimum content of metal as well as for deep search after UXO of substantial size. Improved detection performance and a wide auto-adaptation to interfering metal components such as diving gear characterize the new 725 K design. The equipment is in service with NATO and is NSN codified.



UWEX® 722 C in operation underwater



UWEX® 725 K, Professional search equipment

## MAGNEX® 130 B

### Underwater magnetic anomaly locator

- Resolution approx. 5 nT
- Sensitivity approx. 30 nT
- Simple to use
- Compact, sturdy, reliable
- Modular design
- Visual and audible detection signals
- Audio coding for field polarities

Magnetic anomaly locator for diver use. The locator indicates magnetic contrasts resulting from ferrous objects. The detection signals are transmitted to the diver by a single sided headset. The signal strength and field polarities are transmitted by an audio signal coding. This locator is by now a standard tool in underwater munitions clearance.

## TREX® 420 TR

### Wire locator

- One knob operation
- High sensitivity
- Pinpoint detection
- Robust
- Signal transmitter available as accessory

The TREX® 420 TR wire locator is applied for a passive or active detection of wires which are 10m long or longer. It has proven its worth in operations which mostly take place in hostile environments.

The locator is sturdy and lightweight. It is operated by one control only.



MAGNEX® 130 B in underwater bomb disposal



TREX® 420 TR wire locator for counter measures

## EBEX® 300

### Underground marker system

- Ideal for road and bench marking
- Precise location of underground markers
- Undisturbed operation in high metal impact areas
- Long lasting marking with passive markers (no battery)

The EBINGER underground marking system consists of passive, electronic markers in cylinder- or ring shape and a corresponding locator. The markers are placed permanently underground to mark a position in the terrain. The locator transmits electromagnetic signals which are converted by the markers to a predefined response which can be detected by the locator. The markers do not contain a battery as they are energized by the locator signal. In Mine Action the system is ideal for bench marking or to clearly mark the course of roads. The locators are not interfered by metal.



EBEX® 300 searching for geodetic point

## TREX® 150

### Sensing system for use in high metal impact areas

- Active locator system for deep search after large sized UXO
- Selective indication in high metal impact areas
- Complementary to conventional bomb location systems
- Ignores small metal scrap
- High productivity
- Audio and galvanometer indication
- Analogue data output for digital survey by EPAD®/EPAS®

New metal detector designed upon the latest EBINGER Transmitter Receiver Exploration-technique. The locator detects ferrous and non-ferrous metal. It differentiates between surface bound scrap metal and deep buried metal objects of substantial size. Small fragments are generally suppressed from indication, even when close to the sensor. The locator shows detection results by audio signal and by a galvanometer with positive and negative range. In digital surveys the character of the detected signatures is processed by the EPAS® software and will be converted into a colour coded map. These features and the high resolution between fragments and large munitions save time and expense for the removal of scrap metal in high metal impact areas.



TREX® 150 in BAC operation



EBINGER technology center Wiesbaum



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### **3. X-ray checkpoint control fort** **Truck and car scan**



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## Product Specification CargoScan 5000M (Mobile)



# CargoScan M

## Intended Use

The Adani Cargo Scan M is a state-of-the-art high-energy low-dose X-ray scanner with portal-shaped detection system for the inspection of loaded vehicles (container or general cargo), designed with innovative “drive-through ” technology. It is designed for the inspection of containers and vehicles to confirm that the cargo complies with the transportation documents and the effective detection of contraband, illegal drugs, weapon and other dangerous objects. It is designed for operation at seaports, traffic control points, customs, temporary storage warehouse and other places where cargo inspection is necessary.

## Key Features

- **Innovative drive-thru scanning technology** - drivers can stay in their vehicles during the scanning process, driving them through the scanning area.
- **Movable** - compact systems, which can be easily relocated by a standard container truck, installed and be fully functional in less than **2 hours with only two support operators.**
- **Small footprint** - the deployment of the CargoScan-M requires a relatively small ground surface without special requirements for additional infrastructure. The controlled area does not exceed 40 m x 30 m.
- **High throughput** – CargoScan-M is able to scan and control rapidly the contents of containers and heavy trucks in controlled traffic flow (free-flow operation mode).
- **High penetration** – it is possible to obtain high-quality X-ray images of inspected objects through 240 mm of steel at truck speeds of 5-10 km/h.
- **High quality X-ray images** – it provides the best spatial resolution of 5 mm and contrast sensitivity of 4 %.
- **Radiation safe for drivers, operators and bystanders-** low radiation dose in combination with the effective radiological safety system guarantees the safety of the vehicle’s driver, bystanders and stowaways.

## Design Features

### Basic Components

The basic components of the CargoScan-M system are:

- X-ray Assembly Unit,
- X-ray Image Detector,
- Image and Data Processing System,
- Facility Control System,
- Radiation Safety System,
- Reserve Power Supply System,
- Car Transport System (option).

### Computer System

The computer System is located in the operators’ room and includes the following:

- Check-in Workstation together with a Manifest Scanner,
- Database Workstation (Server) for storing and administering access to images,
- Two Review Image Workstation together with an Image Printer Unit,
- Control System Workstation.

## CargoScan M Brochure

## Software

The system provides the following software functions for the X-ray image acquisition, storage and processing:

- Entering and storing the information (by the operator),
- Automatic acquisition of data from the X-ray detector,
- Visualization of the image in real time,
- Brightness and contrast adjustment,
- Presetting the brightness and contrast for heavy and weak absorbing objects,
- Adjusting the intensity scale over the whole image or in the window,
- Step-by-step (ZOOM from 2 up to 8) and smooth zoom,
- Pseudocolouring according to the density with the possibility of selection of one or more colour palettes,
- Enhancing the contrast,
- Enhancing the boundaries and presetting the boundary sharpness,
- Pseudorelief,
- Marking suspicious objects with comments,
- Image inversion,
- Image scrolling,
- Instrument for measuring linear distances,
- Supporting different image formats (designer's original format, BMP, JPEG),
- Visualization of the date and time,
- Scanning the manifest and saving the same together with the image,
- Counting the inspection objects,
- Printing-out the images or a selected portion (pictures, comments and accompanying documents on separate sheets).

## Radiation Safety System

The **Radiation Safety System** includes:

- **radiation protection shielding** mounted around the high-energy X-radiation source and around the operators' room, and in addition on the vertical part of the manipulator arm (behind the X-ray receiver) up to the height of 2 m from the lower edge of the receiver,
- **radiation detection beacon** based on standalone autonomous dosimeter and equipped with a siren,
- **a built-in X-ray monitor** to control the output X-ray beam intensity. In case of exceeding any preset dose rate thresholds, sound and light alarms are triggered and the X-ray source is shutdown automatically,
- **subsystem of sensors** to automatically detect the vehicle position and switch on/off the scanning process,
- **infrared perimeter control system** for guarding the perimeter of the controlled area. Unauthorized entry of anybody through the perimeter causes automatic shutdown of the X-ray source,
- **siren and red flashing lights** for warning scanning initiation and presence of the X-radiation during the scanning process,
- **video surveillance (CCTV) system** of the controlled area,
- **devices designed to block X-ray assembly unit operation** in case there is operation personnel in the controlled safety area
- **intercommunication system**,
- **emergency shutdown buttons** located both outside and inside the operation room.

## TECHNICAL SPECIFICATIONS

### OPERATING ENVIRONMENTAL CONDITIONS (STANDARD)

Ambient temperature range	from - 10 °C to +40 °C
Relative air humidity range	from 45% up to 80 % at t = +25 °C
Atmosphere pressure range	84.0 to 106.7 kPa (630...800 millimeter of mercury)

### POWER SUPPLY REQUIREMENT

Supply voltage	380/ 400 V, 50/60 Hz, 3 phases
Maximum power consumption, not more than	20.0 kW·A.

### TRANSPORTATION/ STORAGE ENVIRONMENTAL CONDITIONS

Ambient temperature range: • transportation • storage	-20 °C to +40 °C -20 °C to +40 °C
Relative air humidity range: - transportation - storage	Max 90 % at temperature plus 25 °C. Max 90 % at temperature plus 25 °C.
Atmosphere pressure range	from 84.0 to 106.7 kPa (630...800 millimeter of mercury)

### PHYSICAL PARAMETERS

Overall dimensions: • In transport position • In working position	8550(L) mm x 2500 (W) mm x 2805(H) mm 8550(L) mm x 8600 (W) mm x 5250(H) mm
Weight:	less 14500 kg
Footprint (operational) dimensions	9 (L) m x 9 (W) m (without controlled area)

### GENERAL DATA

Cargo inspection technology	<b>Drive-Thru Portal</b> CargoScan-M is stationary. Vehicle is moving. Truckers stay with their vehicles during scanning operations, driving them under their own power through the X-ray portal
Maximum size of the scanned objects	3 m (W) × 4.4 m (H) x ≥ 25 m (L)
Dimension of inspection tunnel	3.5 m (W) × 4.5 m (H)
Minimum scanning height	0.4 m from the ground level at the detector plane
Beam shape	Vertical fan-shaped beam
Scanning speed	~5-10 km/h – the object moves under its own power
Throughput capacity*	up to 30 objects per hour (12 m containers on the truck) up to 60 objects per hour (6 m containers on the truck)
Setup time	Less than 60 min
Autonomous power supply (reserve)	Autonomous diesel generator with diesel oil reserve for 24 hours continuous operation

\* See ANNEX 1 for optional configuration with higher throughput

## X-RAY ASSEMBLY UNIT

Nominal energy	5 MeV
----------------	-------

## X-RAY IMAGE DETECTOR

Type	Modular L-shaped linear detector
Number of detectors elements	1024
Detector pixel size	5 mm
ADC capacity	1,048,576 (20 bits)
Scanned height	From 0.4 m to 4.5 m

## IMAGE QUALITY

Image quality depends on the scanning speed and detector settings. Typical characteristics are shown below.

Operational speed = 5-10 km/h	
• penetration (steel)	240 mm
• wire resolution (copper wire)	Ø 3.0 mm
• spatial resolution	5 mm
• contrast sensitivity	4 %

## RADIATION DOSE RATE

Maximum dose (dose to stowaway)	<1.0 µSv/scan (typically 0.2-0.6 µSv)
Maximum dose to driver <ul style="list-style-type: none"><li>• if the driver's cab is not scanned</li></ul>	<0.02 µSv/scan (typically 0.012-0.015 µSv)
Maximum dose rate in operators working area	<0.5 µSv/h
Dose rate outside: <ul style="list-style-type: none"><li>• the scanning area 40 m x 30 m</li><li>• the area 80 m x 60 m</li></ul>	<0.4 µSv/h <0.13 µSv/h
Size of Controlled Area (in compliance with ICRP 60)	≤ 40 (W) m x ≤ 30 (L) m for 0.5 µSv/h on average

## RADIATION SAFETY SYSTEMS

Radiation situation monitor in the operators' room with the sound and light alarm	1 monitor AT1123 with the sound and light alarm unit
Built-in dose rate monitor in the accelerator beam	1 monitor included in the complete set of the accelerator
CCTV video surveillance cameras	four video cameras and one colour monitor, quadrator
Guarding the controlled area perimeter	infrared perimeter control system
Emergency shutdown buttons	In all rooms and outside - on the X-ray detector module and in a car body
Safety interlocks	everywhere as necessary
Light and acoustic signals	3 red flashing lights and an acoustic siren with red light
Fixed radiation shielding components	operator's room shielding, accelerator shielding and beam-limiting device (parts of <b>X-ray source</b> ), direct beam stopper (located on the manipulator arm)
Vehicle presence sensors	optical sensors
Warning inscriptions and symbols	over the perimeter of the Controlled area; on the compartment of the X-ray generator

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## **DRIVE-THRU PORTAL CARGO INSPECTION SYSTEM CargoScan DTP-7500R (Relocatable)**



# 1. INTRODUCTION

The present **Technical Proposal** contains all technical information about **Cargo Inspection System DTP-7500R (Relocatable)** (hereinafter – DTP-7500R). DTP-7500R is intended for the fast vehicle inspection (containers and cargos) in the traffic flow.

## 2. GENERAL PERFORMANCE DATA

### 2.1. INTENDED USE

The DTP-7500R system:

- State-of-the-art dual-energy low-dose X-ray scanner with portal-shaped detection system for inspection of loaded vehicles (container or general cargo), designed with innovative “drive-through” technology.
- Designed for inspection of containers and vehicles for identification of the cargo compliance to the transportation documents, detection of contraband, illegal drugs, weapon and other dangerous objects. Dual-energy technology provides discrimination of the materials according to their atomic number, coloring at the appropriate color.
- Designed for operation at seaports, traffic control points, customs, temporary storages warehouses and other places where total 100% cargo inspection is necessary.

### 2.2. KEY FEATURES

**Innovative drive-thru scanning technology** – drivers can stay in their vehicles during scanning process, driving them through the scanning area.

**Movable** – compact system, which can be easily relocated by a standard container truck, installed and be fully functional in 5 days by support of two-three persons.

**Small footprint** – the deployment of the DTP-7500R requires a relatively small ground surface without special requirements for additional infrastructure. The controlled area does not exceed 40 m x 30 m.

**Dual-energy configuration** - dual energy imaging provides automatic color coding of materials with different atomic numbers so that screening staff can easily identify within any parcel dangerous objects or objects that are prohibited for importing (exporting) or are not declared.

**High throughput** – DTP-7500R is able to scan and control rapidly the contents of containers and heavy trucks in controlled traffic flow (free-flow operation mode) - 30 pcs 40' containers or 60 pcs 20' containers per hour.

**High penetration** – it is possible to obtain high-quality X-ray images of inspected objects through 200-300 mm of steel at truck speeds of 5-10 km/h.

**High quality X-ray images** – it provides the best spatial resolution of 5 mm or 10 mm, and contrast sensitivity of 4 % or 2 % respectively.

**Radiation safe for drivers, operators and bystanders.** Low radiation dose in combination with the effective radiological safety system guarantee safety for vehicle driver, bystanders and stowaways.

### 3. TECHNICAL SPECIFICATIONS

#### OPERATING ENVIRONMENTAL CONDITIONS (STANDARD)

Ambient temperature range	from - 10 °C to +40 °C
Relative air humidity range	from 45% up to 80 % at t = +25 °C
Atmosphere pressure range	84.0 to 106.7 kPa (630...800 millimeter of mercury)

#### POWER SUPPLY REQUIREMENT

Supply voltage	220/230 V, triple phase, 50/60 Hz,
Maximum power consumption, not more than	20.0 kV·A.

#### TRANSPORTATION/ STORAGE ENVIRONMENTAL CONDITIONS

Ambient temperature range: transportation	-20 °C to +40 °C
Relative air humidity range: transportation storage	Max 90 % at temperature plus 25 °C. Max 90 % at temperature plus 25 °C.
Atmosphere pressure range	from 84.0 to 106.7 kPa (630...800 millimeter of mercury)

#### PHYSICAL PARAMETERS

Overall dimensions: X-Ray Source Module Control Module X-Ray Detector (in transport position)	5960(L) mm x 2440(W) mm x 2700(H) mm 5750(L) mm x 2402(W) mm x 2620 (H) mm 5325(L) mm x 1045 (W) mm x 1530 (H) mm
Weight: X-Ray Source Module Control Module X-Ray Detector	10000 kg 3500 kg 2000 kg
Footprint (operational) dimensions	8,5 (L) m x 24 (W) m

**Note: L-length, W-width, H – height**

## GENERAL DATA

Cargo inspection technology	<b>Drive-Thru Portal</b> DTP-7500R is stationary. Vehicle is moving. Truckers stay with their vehicles during scanning operations, driving them under their own power through X-ray portal
Maximum size of the scanned objects	3 m (W) × 4.4 m (H) x ≥ 25 m (L)
Dimension of inspection tunnel	3.5 m (W) × 4.5 m (H)
Minimum scanning height	0.4 m
Beam shape	Vertical fan-shaped beam
Scanning speed	~5-10 km/h – the object moves under its own power
Throughput capacity	Up to 50 units per hour (10 km/h, 20 m)
Setup time	5 days
Autonomous power supply (reserve)	Autonomous diesel generator with diesel oil reserve for 24 hours continuous operation

## X-RAY ASSEMBLY UNIT

Nominal energy	7,5 MeV (dual-energy configuration)
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## X-RAY IMAGE DETECTOR

Type	Modular L-shaped linear detector
Number of detectors elements	992 pixels
Detector pixel size	4.6 mm
ADC capacity	1,048,576 (20 bits)
Scanned height	From 0.4 m to 4.5 m

## IMAGE QUALITY

Image quality depends on the scanning speed and detector settings. Typical characteristics are shown below.

<b>Operational speed = 5-10 km/h</b> <b>Detector mode:</b> pixel averaging (optimum for the highest penetration)	
penetration (steel)	280 - 300 mm
wire resolution (copper wire)	∅ 2.9 mm
spatial resolution	5 mm (5 km/h)
contrast sensitivity	3 – 3.5 %

## RADIATION DOSE RATE

Maximum dose (dose to stowaway)	<1.0 µSv/scan (typically 0.6-0.9 µSv)
Maximum dose to driver • if the driver's cab is not scanned	<0.02 µSv/scan (typically 0.05-0.1 µSv)
Maximum dose rate in operators	<0.1 µSv/h on average per 1 hour of operating

working area	
Dose rate outside: <ul style="list-style-type: none"> <li>the scanning area 40 m x 30 m</li> </ul>	<0.5 $\mu\text{Sv/h}$ per any hour of operating
Size of Controlled Area (in compliance with ICRP 60)	$\leq 60$ (W) m x $\leq 60$ (L) m for 0.12 $\mu\text{Sv/h}$ on average per any hour of operating

### RADIATION SAFETY SYSTEMS

Radiation situation monitor in the operators' room with the sound and light alarm	1 monitor AT1123 with the sound and light alarm unit
Built-in dose rate monitor in the accelerator beam	1 monitor included in the complete set of the accelerator
CCTV video surveillance cameras	four video cameras and one 9" black and white monitor fastened to the operators' table.
Guarding the controlled area perimeter	infrared perimeter control system
Emergency shutdown buttons	Inside the operators' room and on the X-ray detector module
Safety interlocks	everywhere as necessary
Light and acoustic signals	4 red flashing lights and an acoustic siren
Fixed radiation shielding components	operator's room shielding, accelerator shielding and beam-limiting device (parts of <b>X-ray source</b> ), direct beam stopper (located on the manipulator arm)
Vehicle presence sensors	optical sensors
Vehicle motion sensors	one sensor (a combination of IR and radiofrequency sensors)
Warning inscriptions and symbols	over the perimeter of the Controlled area; on the compartment of the X-ray generator

### RECOMMENDED MODELS OF COMPUTER EQUIPMENT

Name	Quantity	Characteristic
Workstation HP dc7800	3	(Intel Core 2 Duo 2,66MHz, RAM 2Gb, HDD 250Gb, DVD-RW, LAN)
Monitor 19"	2	LCD, 4:3
Monitor 24"	1	HP LP2465, LCD
UPS	3	APC UPS SC 1000VA Smart (SUA1000I)
Switch		D-Link 10/100/1000 8port
Multifunctional device HP DeskJet F4283	1	printer, scanner, copier
Controller PCI	1	2xRS232
Video adapter	4	not worse than NVIDIA GF 8600GT
External hard disk	2	not less than 500 Гб

**ADANI reserves the right to change the Technical Proposal without further notice.**

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## 4. Explosive - Detection



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# New Security Concept for Homeland Safety

## *miniEXPLONIX*

FOR EVERYDAY USE

fast multi-purpose  
explosive detector

## **EXPLONIX**

FOR EXPERTS

explosive and radiological material  
sniffer / identifier

NEW





Bomb squad with EXplonix



Analyse in Airplane with Explonix



Vehicle Control by robot



Analysing traces on mobile, credit cards, belt buckles



## Lightweight explosives sniffer set to combat terrorism

A fresh approach to systems technology and operational simplicity has resulted in a new powerful and fast-acting portable explosives detector that can boost public security around the globe



The EUREKA E! 3109 EULASNET EXPLOSIVES ANALYSER project resulted in a new generation of reliable, robust and fast-acting portable explosive analysers and detectors to improve public security at airports, railway stations, sport stadiums, banks and nuclear power stations. The compact, lightweight units are intended to prevent terrorist attacks by detecting explosive devices and bomb equipment through molecular traces on luggage, clothes, laptop computers, mobile phones, bank notes and identity documents. The systems can find bombs hidden in buildings, crates, road vehicles, aircraft, trains, shops or transport terminals and can be used as add-on detectors to X-ray scanners in public places.

Terrorism is an increasing problem around the world, threatening transport, power stations, financial centres and concentrations of people – from sports stadiums to shopping centres. Governmental authorities are having to put increasing priority on protecting the civilian population.

This means equipping the police, army and other security organisations with the equipment necessary to detect explosives quickly and reliably.

There has been a particular problem with portable analytical detectors. While they can often offer good detection, they tend to be so sensitive to interfering chemicals that they are difficult to use under real field conditions, leading to high false-positive reading rates. The E! 3109 EULASNET EXPLOSIVES ANALYSER project therefore set out to develop a

George Blaha of Czech instrumentation specialist RS DYNAMICS, which co-operated with Spanish engineering company Sener Ingenieria Y Sistemas, responsible for systems testing, and the Czech Academy of Sciences.

“First, we had to find a new principle of fast pre-separation to reduce dramatically the false-positive rate and improve overall operational robustness so that testing time is kept to a minimum. Secondly, we needed good and fast detection of compounds with very

A selective optical detector provides highly effective suppression of cross contaminants; this means anyone can operate the equipment with simple training.

George Blaha - RS DYNAMICS, Czech Republic

new technological approach for real field application at airports, border crossings, public buildings or nuclear power stations, with equipment operated by security forces rather than highly trained analytical staff.

### Solving four main problems

“We set out to solve four main problems,” explains project co-ordinator

fast cleaning after exposure. Thirdly, we needed high selectivity to avoid system oversaturation and cross contamination that lead to misinterpretation of results. And fourthly we wanted a system able to give continuous readings with a response time of around one second.”

The result of the project is a global first in terms of a portable explosives sniffer

that really works. The instrument is much more sensitive than its competitors, it can be housed in a single compact and lightweight case, and it is easy to use by any operator with a minimum of training. Moreover, it employs no radioactive sources, simplifying application.

#### Completely new technologies

“We developed several completely new technologies,” says Blaha. “New principles of sampling in particulate and vapour mode enable high operational robustness and effective sampling. And this sampling can be carried out even in the rain or in contaminated environments such as around diesel exhausts at a border crossing or in pubs or cafés.

“In addition, a new concept based on a selective optical detector provides

to: download data and configure the system remotely; install the system easily in any automatic robotic systems such as a bomb squad robot or as an add-on unit to an X-ray scanner; and remote service of the instrument by the manufacturer in minutes, even in the middle of the desert for example, by satellite phone.

#### Moving to the market

At the end of the successful EUREKA project, ten prototypes were available. Since then, RS DYNAMICS has continued to develop the instrument and modify the components for cost-effective manufacture. Use of computer-aided production has helped but a major investment is required in metal-pressing equipment to cut unit costs and ensure competitiveness against mainly US manufacturers.

open up this market: it is tendering for major government contracts in the Middle East and India; and it is looking at working with a strong partner willing to invest and share in the efforts.

“EUREKA has helped a lot,” explains Blaha. “While the financial side may have been limited – it has cost much more to finish the whole project and prepare for series production – EUREKA helped us make international contacts, build our reputation and give us an excellent chance to enter the club of EU companies, pushing top technology. Success in this project is opening up a global market for us, making our company well recognised and known. This is very important for the future of our activities and also for the professional growth of our highly motivated young team of successful scientists.”

EUREKA helped us make international contacts, build our reputation and give us an excellent chance to enter the club of EU companies, pushing top technology.

**George Blaha** - *RS DYNAMICS, Czech Republic*



highly effective suppression of cross contaminants; this means anyone can operate the equipment with simple training.”

Other benefits include a new internal computer-based system that allows direct Internet connectivity and full remote control over wired and wireless links. This makes it possible

Demonstrations of the systems at major exhibitions have drawn tremendous interest from government authorities, particularly in the Middle East and Africa. And close co-operation with a major distributor in UK with skilled local partners around the globe is indicating a huge potential market for the Explonix instruments. RS DYNAMICS is now looking at two different ways to

RS DYNAMICS has already participated with SENER, its partner in EULASNET EXPLOSIVES ANALYSER, in a second EUREKA project – E! 3442 BEAGLE – finishing in mid 2008. And the company is collaborating with Sener on a new EUREKA project, due to start in 2008.



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# EXPLONIX

## Portable Detector - Analyser Explosives & Radioactivity

**Fast and reliable detection and identification of smallest traces of explosives together with all radioactive materials**

### NEW !

- Ultra-fast 1-second detection
- Advanced Infra-Red Sampling with instant read-out detects all (incl. non-volatile) explosives in Vapour Mode in the real time
- Analytical Particulate Mode with detailed identification
- Simultaneous explosives and radiological detection quickly finds dirty bombs or any other radioactive contraband
- The highest resistance against cross-talking chemicals and overload
- The best false alarm rate

### MAIN FEATURES

- Revolutionary new, Infra-Red Vapor Mode detects all the explosives, including non-volatile types, continuously (no sampling-analyzes period required) within 1 second
- Analytical Particulate Mode offers explosive identification with ultra-low false alarm rate, extreme overload resistance and fast cleaning
- Special detection mode for Gun Shot Residues (GSR) identifies shooterseven long time after shooting
- Detects and identifies all ICAO standard explosives including all plastic types (even without taggants) and all home-made explosives
- Highly resistant against overload from a wide range of interfering agents and/or all sampled explosives
- Fast and easy self-cleaning after excessive exposure
- New, patented, "Infra-Red Continuous Vapor Sampler" offers unbeatable capability to catch all kind of explosives in vapor Mode
- New, patented, "Needle Sampler" for Particulate Mode offers excellent self-cleaning with effective pre-separation of interfering compounds and enabling sampling in heavy rain
- Easy, user friendly one-button operation with automatic data logging. Pre-set operation profiles quickly select optimal operational parameters
- Full featured, built-in Gamma-Ray Spectrometer, running silently on background, detects and identifies radioactive contraband

### ADDITIONAL FEATURES

- Full remote control via USB, RS 232, Ethernet, GPRS, GSM, WiFi
- Remote factory checking/service via Internet from any location world-wide
- Optional 1-D/2-D Bar-Code Reader for instant identification of scanned subjects (baggage)
- EXPLONIX\_VIEW PC suit for drag&drop data transfer, full remote control and Internet communication
- Docking Station for continuous operation



## All-in-One

## Instant 1 Second Reading !

## No Radioactive Source !

### BASIC APPLICATION

- Rapid hand-held detection, identification and location of contraband explosives potentially combined with radioactive materials
- Easy checking of passengers and baggage with the highest through-put available
- Easy integration with other security technologies (X-Ray scanners, bomb-squad robots)
- Selective identification of post-exposure or gun shot residues
- Fast checking of passengers scanning their boarding passes (one second for one scan)

# Specifications



# EXPLONIX

**EXPLONIX** is a highly sensitive, portable, multi-functional explosives/radiological compounds detection and analytical system offering optimal power & flexibility for fast, reliable detection and identification of a wide range of explosive and radioactive material traces

## DETECTION AND ANALYTICAL RANGE

Explonix detects all ICAO standard and military/industrial explosives down to picogram level, including TATP and other home made explosives and all plastics (PETN/HMX/RDX based explosives) even with no taggant added

## SAMPLING PRINCIPLES

- The revolutionary new Infra Red Continuous Vapor Mode instantaneously detects the presence of all explosive materials, including non-volatile explosives. This is the first principle, capable to sample and detect high vapour pressure (non-volatile) explosives (HMX, RDX, PETN based) in continuous vapour mode!
- Analytical Particulate Mode facilitates a highly effective sampling method. The needle sampler can collect even in the tiniest crevices or on flat smooth surfaces without any need for gloves and facilitates reliable detection even in heavy rain.
- The innovative Cold Vapor Mode utilizes a new type of metal tube sampler and sampling technology that ensures maximum sensitivity with minimal loss of explosive material for subsequent detection. Suitable also for GSR (Gun Shot Residues) detection
- Analytical Particulate Mode provides detailed identification into basic root explosive components (PETN, TNT, NG, NC, HMX, RDX and others), also showing the volume of explosive material being sampled
- All operating modes feature effective prevention against system overload. Sampling even extremely high concentration cannot cause false alarm and does not bring any cleaning problem.
- Both the measured data together with baggage identification (bar code registered) are automatically stored and optionally wirelessly sent to the airport data logistic system.
- Advanced technology enables fast and user friendly in-situ calibration and fast detectability verification, securing proper instrument operation at any time, anywhere, without any special lab equipment

## EXPLOSIVES SECTION

- Detection limit: picogram reading
- Excellent Suppression of interfering compounds (perfumes, diesel exhausts, various odours, diesel fuel vapours, various desolvents and other organics)
- Detection time: 1 second for both vapor modes
- Detection range: all known explosives, upgradable
- Analytical time: < 30 second in Particulate Mode
- Warm-up time: 30 seconds to 1 minute
- Cleaning time: typically 10 seconds up to several minutes in case of huge contamination

## RADIOLOGICAL SECTION

- Full-featured Gamma-Ray spectrometer with radionuclide identification and internal upgradable library, PC graphic spectrogram output and automatic background correction and calibration. Immediate response/alarm on exposure of smallest level of radiation
- Detector type: NaI/Ti
- Sensitivity (static): 30 cps per MBq/m (Cs\_137)
- Resolution: Better than 9% FWHM at energy 662 keV
- Energy Range: 20 keV - 3.0 MeV
- Number of Channels: 1024
- Radionuclide identification library: upgradable
- Calibration standard: Cs\_137

## GENERAL

- Warm-up time: 30 seconds to 1 minute
- User-friendly one button operation
- Automatic system check on start-up
- Direct Internet Connection - no computer needed
- Remote operation via wire or wire-less Internet, Cell GSM modem providing full remote control of all operations, set-up, configuration and calibration, data download and system check from manufacturer
- Communication: USB 2.0, RS 232, RJ45 Ethernet, WiFi
- Data format: EXCEL spread sheet via EXPLONIX\_VIEW software
- Operating system: Win7/Vista/XP/2000 compatible
- Dimensions: 105 x 260 x 170 mm (including handle), weight: 3.2 kg without batteries
- Shipping weight: 13 kg (incl. transport case, calibration kit, docking station, accessories)
- Automatic calibration of all analytical channels
- Operates in a number of factory pre-sets and/or user-defined profiles, adapting the system capabilities to various application tasks and operating conditions
- Built-in 2-D or 1-D Bar-Code reader
- Acoustic, visual or remote alarm for all channels
- Vapour sampling rate: 0.1 to 7 litres/min (preset)
- Power Supplies: Internal Battery continuously charged in Docking Station powered by 100-240 VAC or 12 VDC
- One-charge Battery Operation: up to 4 hours in Vapour mode, 2 hours in Analytical Particulate Mode
- Continuous operation in Docking Station
- Display: full graphic back-light
- Keyboard input: multi-function sealed keys
- Operating environment temperature: -5 to + 54 °C

## OFFICIAL CERTIFICATIONS

- CEE Compliant
- CAA (EU Civil Aviation Authority) Certification for the use in all airport applications



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**miniEXPLONIX**



- \* **the smallest (pocket size)**
- \* **the fastest**
- \* **the lightest**
- \* **the most sensitive**
- \* **the most robust & reliable**
- \* **the easiest to operate**
- \* **the most affordable**

**... explosive agents detector/sniffer**

## Characteristics:

- The smallest (real pocket size)
- The fastest
- The lightest
- The easiest to operate
- The most sensitive
- The most robust and reliable
- The most affordable

... portable Explosive Detector on the world market !

## Sampling & Detection:

- Semi-Selective Infra-Red Continuous Vapour Mode with instant reading
- Particulate Mode using sampling strips with Infra-Red collection and instant reading
- Colour display with graphic (bar-graph) and numeric output
- Acoustic and Red-Flashing visual alarm
- One-button operation
- No "sampling - analysis" intervals required, instrument works in continuous reading mode!
- Internal flash-disk for tens thousands measurements

## Detection parameters:

- Detects ALL the EXPLOSIVES incl. "home made" down to nanogram level
- Excellent detection of all non-volatile explosives in Semi-Selective IR Continuous Vapour Mode
- Analysis time: about 1 second
- Extremely resistant to interfering chemicals and organic compounds, perfumes, etc.
- Excellent false alarm rate

## Cleaning:

- Typically within few seconds even after high exposure

## Start-up / warm-up time:

- Cold start: typically 5-18 seconds

## Physical:

- Built-in WiFi module for full remote control/data download/factory service (optional)
- The whole day operation for one battery charge
- Easy exchangeable battery, can be supplied with two batteries (optional)
- The most advanced military category LiPol battery cells for low weight, high capacity and long life
- Robust belt holster for comfortable whole-day wearing (similar size to gun holster)
- Extremely robust & highly ergonomic case made of advanced carbon fibers plastics for high impact resistance and light weight
- Designed & manufactured for heavy duty military use with highest level of reliability
- "Falling water" resistant (IP42)
- Heavy Duty carrying case for the instrument with all accessories

## Weight:

Without batteries: 0.400 kg  
With batteries: 0.685 kg

## Size:

Length: 249 mm  
Height: 48 mm minimum - 55 mm maximum  
Width: 65 mm

## Operation:

- Extremely user-friendly and easy to operate - using only one button. First press: start-up, second press: measurement, third longer press: switch-off.
- All operational parameters configurable from PC; Password protected.
- PC connection: WiFi, USB 2.0, RS 232
- Android mobile platform compatible via WiFi

## Training:

- NO special operator's training required, easy operation understandable to any operator without special qualification
- Easy and simple training of expert/commander to set-up operational parameters via PC

## Remote control:

- All operations remotely controllable via PC/ Android remote control software through WiFi, USB 2.0, RS 232 or Internet (TCP/IP Protocol)
- Android mobile platform remote control via WiFi
- Ideal for robotic applications, one-minute installation
- Remote data download and configuration

## Factory remote checking, service and calibration:

- Available through any Internet connection (WiFi or cable network connection)
- Capability to remote factory check & fix of all small problems and calibration.
- RS DYNAMICS checking server available 24/7

## Power Supply:

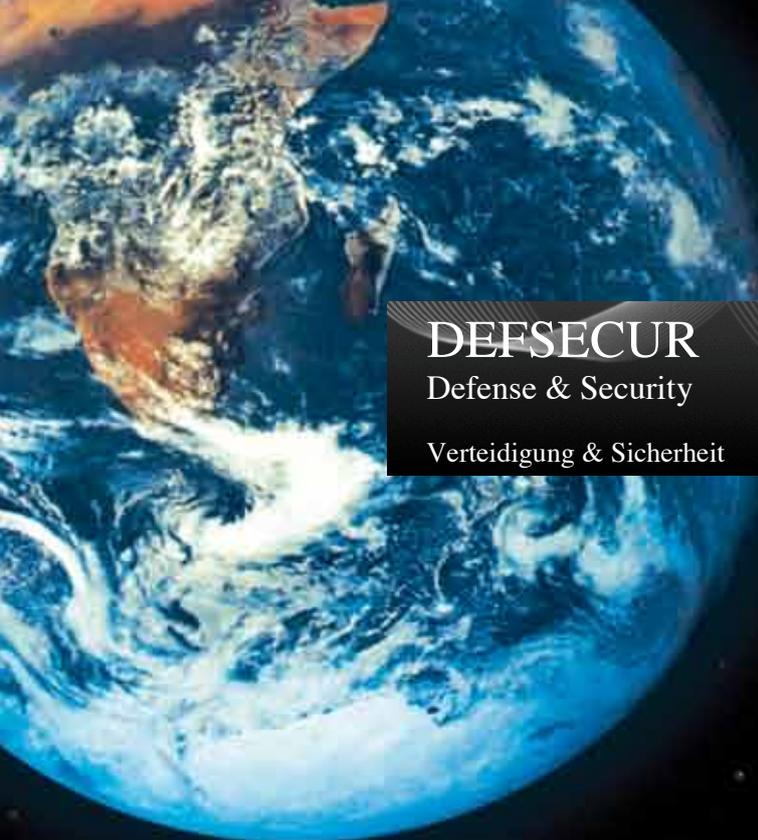
- One LiPol Battery pack (two packs optional)
- Battery charger operable from 100 to 250 V AC included
- Car adapter - CLA Charger 12V DC (optional)

## Affordable Consumables:

- Detector cartridge (enough for 4000 to 6000 measurements)
- RS DYNAMICS Sampling Strips

## Environmental:

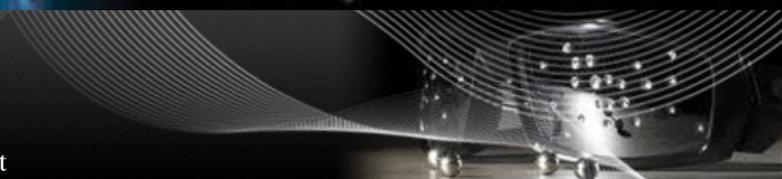
- No radioactive source inside the unit
- No toxic materials inside the unit (excl. consumables - batteries, det. cartridges)
- Product fully recyclable at supplier side



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**EXPLONIX**

***Portable Trace Explosive  
Sniffer – Analyser***



## New Vapour Mode

The **EXPLONIX** represents a totally innovative approach in both vapor and particulate sampling techniques.

Depending on the particular application, the operator can select from following operational modes:

1. *Vapour Modes:* a) *Continuous Vapour Mode*  
b) *Analytical Vapour Mode*  
c) *Post-explosion Residues*

### 2. *Particulate Mode: Fast sampling & identification*

#### 1.a) *Continuous Vapor Mode*

The long-awaited fast and efficient sampling technique instantaneously detects the presence of explosive material with a time response of 1 second and displays the volume on the screen while sampled air is continuously sucked into the instrument.

In practice, having immediate results during continuous sampling is essential. When any explosives material is detected, an Analytical Particulate Mode or Analytical Vapour Mode can be selected for more detailed investigation of the sample in question with analytical identification of the captured explosives traces. This technique brings the fastest through-put at various checking points.

The new, innovative Vapour Sampler is used for continuous vapour sampling. Designed for both, the Continuous Vapour Mode and Analytical Vapour Mode described below, it brings unbeatable resistance against contamination and provides the fastest analytical response, as well as immediate cleaning even after massive exposition levels.



*Continuous and Analytical Vapour Sampler*

#### 1.b) *Analytical Vapour Mode*

The latest cutting edge generation of analytical vapour mode offers the ideal combination of an instantaneous **1 second reading** (effective during the sampling interval) followed by a 28-second analysis and identification period. The presence of explosive contraband in the tested location is thus indicated instantaneously during the sampling interval without any delay. In under half a minute analysis results (the group of explosives, the main compound and volume) are displayed on the screen. This combination of immediate reading followed by detailed analysis enables the maximum level of inspection effectiveness and reliability.



*Explosives material identification is obtained within 28 seconds after finishing the sampling, while the alarm is indicated immediately during sampling*

#### 1.c) *Post-explosion Residues*

This sampling technique means that air can be sucked into the instrument at a high flow rate (8l/min) to collect the maximum quantity of explosives microparticles adhered to flying dust particles. The collected explosive material is then further processed and analysed. This sampling technique thus provides an unbeatable capability for identifying gunfire suspects. The reading is effective even several days after use of firearms.



*Integrated Bar-Code Reader provides instant identification of scanned bag and passenger*

Generally, vapour sampling techniques have suffered from sampling of various interfering compounds originating from the human body (such as fatty acids, odours or perfumes, which may occur in huge vapour concentrations) or from other interfering sources such as unburned hydrocarbons or products of combustion. This effect has generally led to impaired functioning in portable detectors, often resulting in the over-saturation of their analytical technology. Devices have required costly and time-consuming cleaning and laboratory service.

To avoid such problems, resulting in the misinterpretation of data or even in false alarms, EXPLONIX is now able to offer this new revolutionary technology, which is completely resistant to over-saturation by interferants, water or huge concentrations of explosives samples.

The new system is utilized for all the above mentioned vapour sampling techniques as well as for the completely new concept of Particulate Mode using revolutionary Needle Sampler.



Needle Sampler

## New Particulate Mode

### 2. Analytical Particulate Mode

EXPLONIX offers a totally innovative system of Analytical Particulate Mode using a newly patented "Needle Sampler" that can easily collect samples even from the tiniest crevices such as door-knob sockets, mobile phones/PDA's keyboard gaps, buttonholes, slide fasteners, watchstraps, clothing seams, purses, locks, handle threads, keys, portable computers and accessory wires and connectors.

Usually when explosives material are handled such inaccessible places tend to retain much higher amounts of explosives traces than smooth open surfaces, from where explosives particles can be easily wiped off.

The Needle Sampler is highly efficient even when collecting samples from smooth open surfaces as it can apply higher specific energy on the surface unit, thus facilitating reliable detection even during heavy rain.

Manipulation with the Needle Sampler does not require wearing gloves as the sampler is equipped with a silicon holder.

After the sample has been collected, the Needle Sampler is inserted into the newly patented front-end release unit where a computer controlled temperature process secures the collected explosives particles release for further analysis and selectively removes interfering compounds. This combination of the Needle Sampler and releasing front-end unit facilitates extremely advantageous and effective pre-separation of explosives traces from interferants.

Analytical Particulate Mode offers explosive identification with an ultra-low false alarm rate, extreme overload resistance and fast self-cleaning capabilities, enabling the detailed identification of explosives in under 30 seconds, also displaying the quantitative volume of explosive material being measured.



Inspecting the car for explosives traces with sampling needle is fast, reliable and not influenced by moisture and other interfering compounds



Checking a car for possible bombs



EXPLONIX with instrument holder for easy carrying and use



The instrument holder maybe equipped with an easy-to-use left or right hand sampler holder

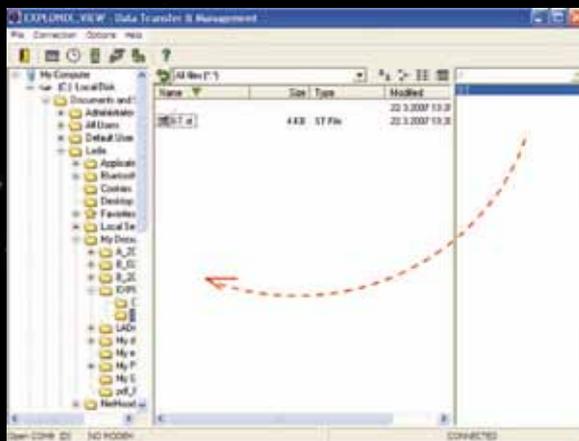
## Computer Data & Internet Connection

EXPLONIX has excellent connection capabilities with the outside environment. The connection can be established either with or without a computer by direct system connectivity to the Internet.

The direct computer connection can be established either by means of a cable (USB, RS 232) or wirelessly via 5 GHz industrial WiFi module.

EXPLONIX\_VIEW PC suite offers a wide range of available remote control operations for all modes of connection.

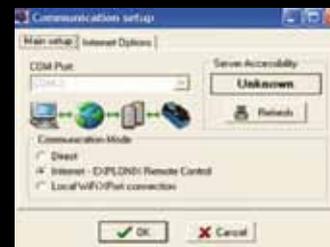
When the communication is established, it is possible to download data and control and configure the instrument. Advanced software provides the unique feature of remote factory checking and service by the manufacturer and automatic 24-hour Internet checking service available to all customers. This operation does not require the computer to connect to the RS DYNAMICS server – just plug the RJ45 cable into the wall Internet socket!



EXPLONIX\_VIEW software offers easy and comfortable "drag-and-drop" data transfer

#	Date	Time	Total	Mass	Group	Value	Mass	Bar-Code
85	2008/01/29	08:01:30	249	No	PLASTIC(OPT)PETG	249	No	
86	2008/01/29	08:02:03	267	No	PLASTIC(OPT)PETG	267	No	
87	2008/01/29	08:04:07	2823	No	PLASTIC(OPT)	2823	No	0208112883
88	2008/01/29	08:03:34	11030	No	PLASTIC(OPT)	11030	No	
89	2008/01/29	08:07:05	7612	No	PLASTIC(OPT)	7612	No	0208112840
90	2008/01/29	08:08:28	8798	No	PLASTIC(OPT)	8798	No	
91	2008/01/29	08:12:05	26490	No	PLASTIC(OPT)	26490	No	0208112846
92	2008/01/29	08:14:24	36433	No	PLASTIC(OPT)	36433	No	0208112821
93	2008/01/29	08:19:43	14700	No	PLASTIC(OPT)	14700	No	0208084408
94	2008/01/29	08:20:26	4121	No	PLASTIC(OPT)	4121	No	
95	2008/01/29	08:30:46	1776	No	PLASTIC(OPT)	1776	No	020841336
96	2008/01/29	08:32:03	2024	No	PLASTIC(OPT)	2024	No	
97	2008/01/29	08:34:30	13000	No	PLASTIC(OPT)	13000	No	0208112848
98	2008/01/29	08:35:46	8143	No	PLASTIC(OPT)	8143	No	020808440
99	2008/01/29	08:37:05	8008	No	PLASTIC(OPT)	8008	No	
100	2008/01/29	08:46:27	1252	No	PLASTIC(OPT)	1252	No	0208112844
101	2008/01/29	08:51:08	4281	No	PLASTIC(OPT)	4281	No	
102	2008/01/29	08:52:05	2046	No	PLASTIC(OPT)	2046	No	
103	2008/01/29	08:54:23	312	No	PLASTIC(OPT)	312	No	020808444
104	2008/01/29	08:58:22	267	No	PLASTIC(OPT)	267	No	

The transferred data table includes all the measured data together with scanned Bar-Code identification



The EXPLONIX\_VIEW software offers multiple means of connection



The Remote Control software provides a comfortable direct "hard copy" of the EXPLONIX control panel with all the functional controls



EXPLONIX installation kit for robotic remote control

## Robotic Application

Advanced technology provides independent, encrypted 5 GHz direct remote control between EXPLONIX, installed at the bomb-squad robot, and a control computer located within a distance of up to 1000 m.

In this way the EXPLONIX can be fully remotely controlled while mounted on a robotic system working in a poorly accessible or hazardous area.

This application is easy, as installation takes several minutes and does not require additional equipment. The remote control software can also be installed at the robot control computer, just by adding the simple remote control panel at the robot control computer screen. Touch screens are supported.



Bomb-squad robot with remotely controlled EXPLONIX in action inside the aircraft

## Principle of Operation

A series of ground-breaking technical solutions systematically solving sampling, pre-separation, trace detection and analysis of explosives material and subsequent advanced data evaluation has now been developed into a totally portable all-in-one analytical device.

1. Pre-separation (Front-end Pre-separator): the collected sample passes through a computer controlled temperature process in the Front-end Pre-separator while interfering compounds are excluded and real explosives traces proceed for further analysis. This technique provides unbeatable system resistance against interfering compounds.
2. Analytical Unit: consists of a Volume Limiter, Multi-stages Analytical Unit and Optical Detector. The collected amount of explosives compounds is first reduced to a certain volume in the Volume Limiter, thus protecting the system from any kind of overload. *This renders the demanding and time-consuming cleaning of the instrument after over-saturation a thing of the past.*

The Multi-stage Analytical Unit separates the sample into individual groups. After this the sample then passes into the Optical Detector for final analysis. Data from the analytical part are processed by the Data Acquisition Unit (3.) to complete the identification process of the explosives sample.

4. A System Control Unit manages the various analytical and operational processes, data file management, data storage and communication with PC and Internet network, including all remote control procedures.

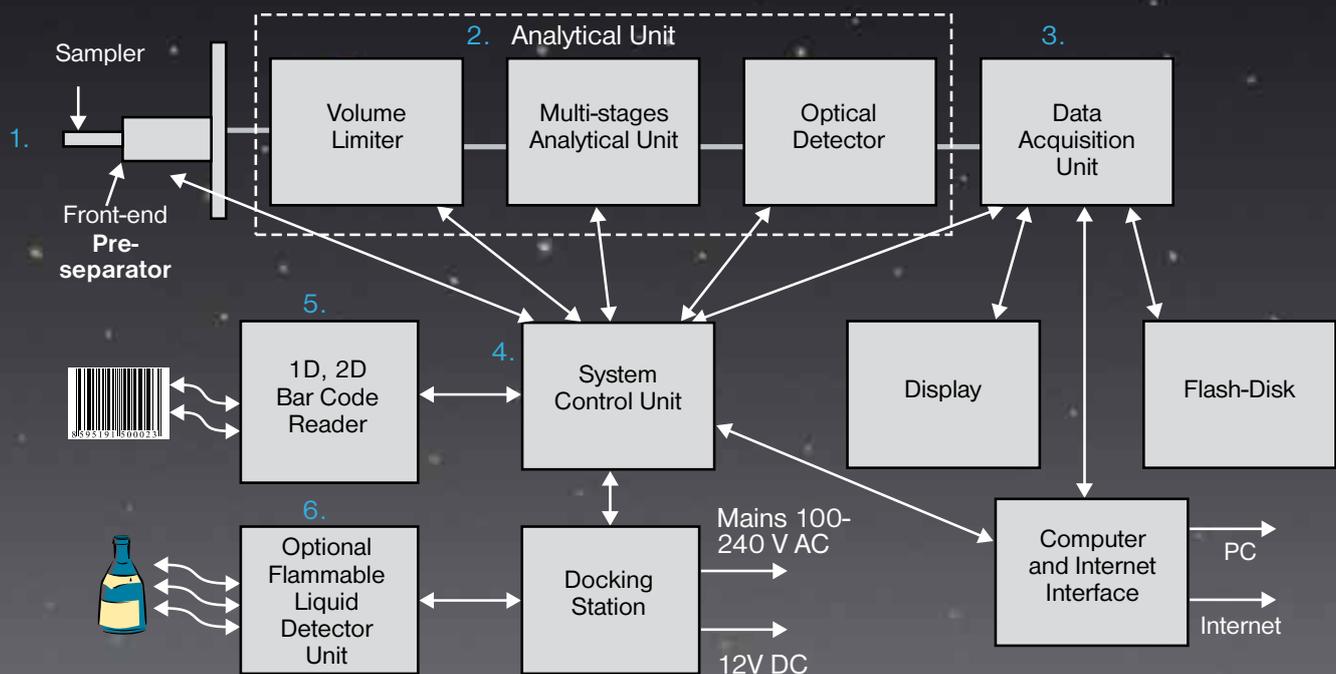
During the analytical interval itself, once all sampled media has proceeded from the Front-end Pre-separator to the Analytical Unit, the System Control Unit rapidly increases the front-end temperature up to 300 deg. C, resulting in perfect cleaning of the sampler down to picogram level.

*This procedure effectively eliminates potential problems connected with sampler contamination.*

5. Optionally, the EXPLONIX can be equipped with a 1-D or future standard 2-D Bar-Code Reader. The Bar-Code is read automatically with one button press before the sampling, the read code then being attached to the measured data table.

6. Other optional system equipment is a Flammable Liquids Detection Unit that can quickly (within one second) recognize dangerous or flammable liquids. It offers great application for airport check-in gates, thus creating an integrated security system.

## Schematic diagram:





## **This highly sensitive, portable explosives detection and analytical system provides:**

**Instant 1 second reading**

**Continuous detection**

**The fastest through-put at various checking points**

**Extremely low false alarm rate**

**Explosives identification**

**High resistance against overload**

**Fast recovery after huge exposition**

**Built-in Bar-Code Reader for airport application**

**Direct Internet connection for data download, configuration, calibration and full remote control**

**Remote factory checking and service via Internet to any world-wide location  
24 hours a day**

**Wire-less remote control for robotic application**

# Portable EXPLONIX Integrates Explosives, Radio-nuclides and Hazardous Liquids Detection

George Blaha, RS DYNAMICS

**B**y integrating several new technologies into a single hand-held device, EXPLONIX represents a truly innovative approach to substance detection that effectively addresses the increasing demands of the security industry.

This independent portable system is capable of detecting:

- Traces of explosives using novel sampling and analysis techniques, providing high sensitivity and maximum operational robustness even with high concentrations of masking compounds
- Sensitive nuclear agents by identification of radio-nuclides (meets US ANSI standards)
- Hazardous liquids.

This combination of capabilities in one device sets a new benchmark for the industry by offering a solution to the detection of so-called 'dirty' bombs that may pose a threat to security in the future.

## Explosives trace detection

The operator can select from the following operational modes:

### Vapour mode

#### *Instant vapour detection*

This long-awaited instant vapour analysis and identification capability can reveal the presence of explosives material within a single second and display the concentration on the screen while sampled air is continuously being sucked into the instrument.

### *Vapour analysis*

The latest analytical vapour mode offers the ideal combination of a single second reading (effective during the sampling phase), followed by a 28 second analysis and identification period. The presence of explosives contraband is thus indicated instantaneously during sampling, followed by detailed analysis enabling the maximum level of inspection effectiveness and reliability.

### *Post-explosion residues*

In this sampling technique air can be sucked into the instrument at a high rate (8 litres/min) to collect the maximum quantity of explosives micro-particles adhering to flying dust particles. The collected explosives material is then processed and analysed. This sampling technique thus provides an unbeatable capability for identifying suspected users of firearms. The reading is effective even several days after the use of firearms.

### *Particulate mode*

The EXPLONIX fast sampling and identification particulate mode uses a recently patented Needle Sampler that can easily collect samples even from the smallest droplets. Sampling with a Needle Sampler provides effective, first level temperature pre-separation and a high level of false alarm suppression.

### *Nuclear agent detection*

EXPLONIX has a built-in sensitive and fast gamma ray spectrometer for simultaneous detection and identification of radiological spectra. While the explosives

analyser samples and analyses traces of explosives, the gamma ray spectrometer measures high energy photons and calculates the X-Ray spectra. While the operator is obtaining explosives measurement results, the system provides detailed information about possible radioactive contraband. The library of identified radio-nuclides is updatable

### *Hazardous liquids detection*

This is an optional add-on sensor unit that can be connected to the EXPLONIX. Any plastic or glass or ceramic bottle up to 2 litres volume can be attached to the detector body surface and the EXPLONIX will display the type of liquid on screen within a second.

### *Internet connectivity*

The EXPLONIX has excellent connection capabilities. Connection can be established either with or without a computer by direct system connectivity to the Internet.

Once communication has been established, data can be downloaded and the instrument checked and configured online. Advanced software also provides remote factory checking and manufacturer service through an automatic 24-hour internet checking service available to all customers. ■

### **Contact information**

**Green Dynamics**

**Website: [www.gd-global.com](http://www.gd-global.com)**

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## 5. Ballistic Protection



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## Special protection vehicles

# DEFSECUR



## BALLISTIC PROTECTION

civil armored vehicles



## BLAST PROTECTION

civil armored vehicles



## Schutzklassen B1 – B7 und VPAM

Zertifizierter ballistischer und Sprengschutz für Sonderschutzfahrzeuge

Entsprechend der Europäischen Norm EN 1522 / EN 1063 - werden 7 Schutzklassen unterschieden: von B1 bis B7.

Allerdings gibt es unterschiedliche Bewertungen zur Entstehung der neuen VPAM-Norm. Im westlichen geht es darum, daß die populärste Schutzklasse für zivile gepanzerte Fahrzeuge - **B6 – nun VPAM 7 genannt wird, und die Schutzklasse B7 wird nun als VPAM 9 bezeichnet.**

Im Folgenden sind die Entsprechungen zwischen den verschiedenen Schutzklassen und Normen bis zur Schutzklasse B7/FB7 nach EN 1522 / EN 1063 aufgeführt:

Klassen		Munition und Geschoss					Pruefbedingungen	
VPAM	EN 1063 EN1522/23	Waffe	Kaliber	Art	Masse [g] Haerte [HRC]	Hersteller/Typ	V [m/s]	E [J]
1	1		.22 lr	L/RN	2,6 ± 0,1	Winchester	360 ± 10	169
2	-		9 mm Luger	FMJ/RN/SC tinned	8,0 ± 0,1	DAG DM 41	360 ± 10	518
3	2		9 mm Luger	FMJ/RN/SC tinned	8,0 ± 0,1	DAG DM 41	415 ± 10	689
4	3		.357 Mag.	FMJ/CB/SC	10,2 ± 0,1	Geco	430 ± 10	943
	4		.44 Rem. Mag.	FMJ*/FN/SC	15,6 ± 0,1	Speer	440 ± 10	1.510
5	-		.357 Mag.	FMJs/CB	7,1 ± 0,1	DAG Spezial	580 ± 10	1.194
6	-		7,62 x 39	FMJ/PB/FEC	8,0 ± 0,1 Core 3,6	PS cold hardened	720 ± 10	2.074
7	5		.223 Rem. (5,56 x 45)	FMJ/PB/SCP	4,0 ± 0,1	MEN SS 109	950 ± 10	1.805
	6		.308 Win. (7,62 x 51)	FMJ/PB/SC	9,55 ± 0,1	MEN DM 111	830 ± 10	3.289
8	-		7,62 x 39	FMJ/PB/HCI	7,7 ± 0,1 Core 4,1 Hardness 65	BZ	740 ± 10	2.108
9	7		.308 Win. (7,62 x 51)	FMJ/PB/HC	9,45 g ± 0,1 Core 4,6 Hardness 60	FNB, P 80	820 ± 10	3.177
10	-		7,62 x 54 R	FMJ/PB/HCI	10,4 ± 0,1	B 32	860 ± 10	3.846

Klassen		Munition und Geschoss					Pruefbedingungen	
VPAM	EN 1063 EN1522/23	Waffe	Kaliber	Art	Masse [g] Haerte [HRC]	Hersteller/Typ	V [m/s]	E [J]
					Core 5,3 Hardness 63			
11	-		.308 Win. (7,62 x 51)	FMJ/PB/WC	8,4 g ± 0,1 Core 5,9	Nammo AP 8	930 ± 10	3.633
12	-		.308 Win. (7,62 x 51)	FMJ/PB/WC	12,7 ± 0,1 Core 5,58 [Hardness 1330 HV 10]	SWISS P AP	810 ± 10	4.166
13	-		.50 Browning	FMJ/PB/HC	43,0 ± 0,5 Core 35,0 Hardness 55 ± 2	SWISS P Penetrator	930 ± 10	18.595
14	-		14,5 x 114	FMJ/PB/HCI	63,4 ± 0,5	B 32	911 ± 10	26.308



**DEFSECUR**

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Verteidigung & Sicherheit

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## **6. Security & Loating technology**



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## EPAD<sup>®</sup> data logger

Latest PDA technology for data recording  
in Mine Action

- Rugged PDA-type data logger meeting MIL Spec 810F
- Available in numerous languages
- Easy to use – level for basic user or advanced users
- IMSMA supporting, GPS-compatible (NMEA 0183 protocol)



## Rugged tool for geophysical survey and QA/QC

Mobile Bluetooth-technology-based PDA data recording system for various sensor types with one to six recording channels. Data recording with real-time display. Ruggedised and waterproof version, suitable for all environments, complies with MIL-STD 810 requirements.

- Rugged and waterproof
- Windows Mobile™ 6.0 operating system
- Long-life Li-Ion battery
- Integrated Bluetooth interface
- VGA display and touchscreen
- 806 MHz processor
- 128 MB DDR SDRAM
- Up to 4 GB Flash memory
- Compact Flash and Secure Digital slot
- Small and lightweight

## MAGNEX® magnetic anomaly locator with EPAD® data logger and OMNISTAR DGPS system

The system allows also for other GPS solutions. The OMNISTAR system supplies high accuracy but is more economic when used only temporarily. The correction data is supplied via satellite and user pays only for airtime and basic equipment.



EBINGER MAGNEX® with EPAD® data logger and OMNISTAR DGPS system

## Robust and powerful

The EPAD® data logger consists of:

- **1x BTSDM (Bluetooth Sensor Data Module)**  
1 to 6 channels 12-bit ADC, 128 Hz sampling rate, Bluetooth Radio Class 2, Bluetooth standard 1.1, serial port profile with remote control hand stick for start/stop of measurements.
- **1x ruggedised field computer**  
800 MHz Marvell PXA320 XScale processor, 128 MB RAM, 1 GB Flash memory, Windows Mobile™ 6.0 operating system with full VGA display, sunlight-readable colour TFT touch screen and illuminated background, with numerical keypad, backlight for low light conditions, built-in 5200 mAh long-life Lithium-Ion battery pack for 15 hours' typical continuous operation. Slots for Flash memory cards (CF, SD type), wireless Bluetooth interface for connection to sensor, USB interface for connection to laptop or PC (with Microsoft ActiveSync™ or Microsoft Windows Mobile Device Center), COM interface for connection to GPS system (optional). 4 GB SD Flash card for data storage.
- **1x EPAD® recording software**  
Real-time display of recorded data (coordinates, detection results and system status), configuration of data recording process (grid parameters, sensor setting), available in various languages such as English, French, Italian, Spanish, Lao, Vietnamese, Khmer. Other languages on request.



EPAD® data logger equipment as supplied

### Initialization

Users are guided step by step through the data logger menu, avoiding confusion or errors

### Data Acquisition

PDA can be limited to this action only (no i-net access, no mp3)

### Settings

PDA communicates with user in selected language (i.e. Lao) and font.

Protected access to various PDA functions for authorised users only.



EBINGER MAGNEX® 5-channels magnetic locator system



EBINGER UPEX® data logging and detection system

## Display and interpretation of detection data made easy

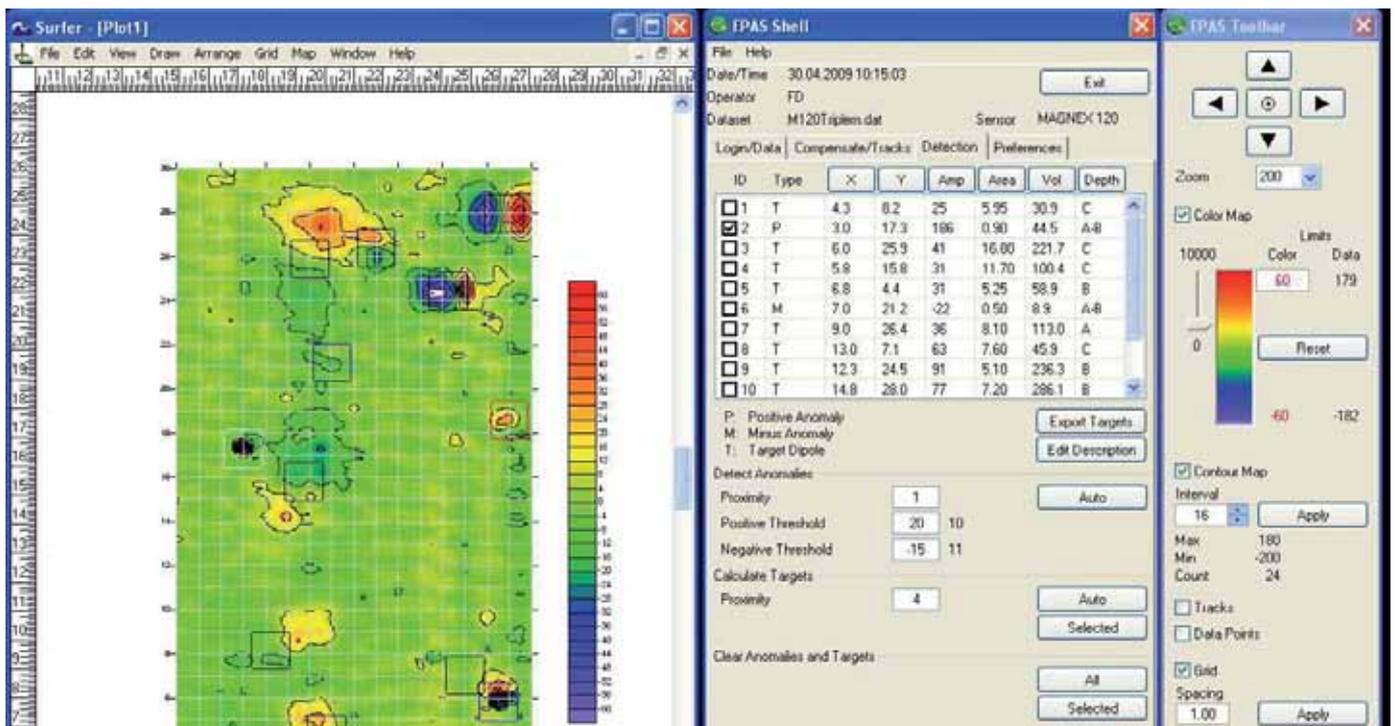
EPAS® sensor data evaluation and visualisation software

- Interactive graphic analysis software for cartographically distributed data using Windows XP and Vista with GPS-coordinate inclusion
- Multifunctional data display: colour-coded maps, contour maps
- Calculation of local coordinates, position and approximate size of supposed metal objects
- Production of object lists and maps
- Exact scale printouts can be produced using all Windows-supported printers and plotters
- Integrated online help
- Supports export functions to prepare complex reports in all text, database, CAD, IMSMA, GIS applications. Raw data is time stamped and forgery-proof
- Import of measurement data from EPAD® via a memory stick
- Display of irregular datasets
- Printing formats A4 to A0

## One software for different sensors meets GIS and IMS system requirements

The EPAS® software was developed to offer an easy-to-use, powerful tool to improve productivity, efficiency and quality in geophysical surveys and QA/QC for ERW clearance operations. It is part of the EBINGER data recording, processing and evaluation product family: the EPAD® single- and multi-channel data loggers support IMSMA conform surveys for surface and sub-surface search after metal objects. They suit several metal detector types such as i.e. the MAGNEX® 120 LW magnetic anomaly detector or the UPEX® 740 large loop. The EPAD® can also be applied with other detection devices.

The EPAS® software provides raw data, pre-processing, graphic visualisation, and interactive evaluation of detection data. It offers an optimised and intuitive user interface intended for people without computer expertise. The simple user interface hides all complex background operations and limits user interactions to the minimum needed in daily practice. It guides operators wizard-like step by step through the program, where the steps just reflect operators usual actions from a non-digital, conventional survey.



EPAS® desktop elements: map showing target distribution

Listed targets with X/Y position, approx. depth and size class

## Extended capabilities for superusers

Pre-processing data includes the removal of systematic data offsets and the correction of track shifting errors. Pre-processing can be performed on complete datasets or on selected tracks (forward direction, backward direction, manually selected tracks). All executed pre-processing operations will be stored into a separate logging file for documentation.

The EPAS® software visualises survey data as two-dimensional colour-coded maps or/and as contour lines. Both visualisations are separately configurable in their data limits and sensitivity. Visualisation of survey data can be superimposed on geographic maps.

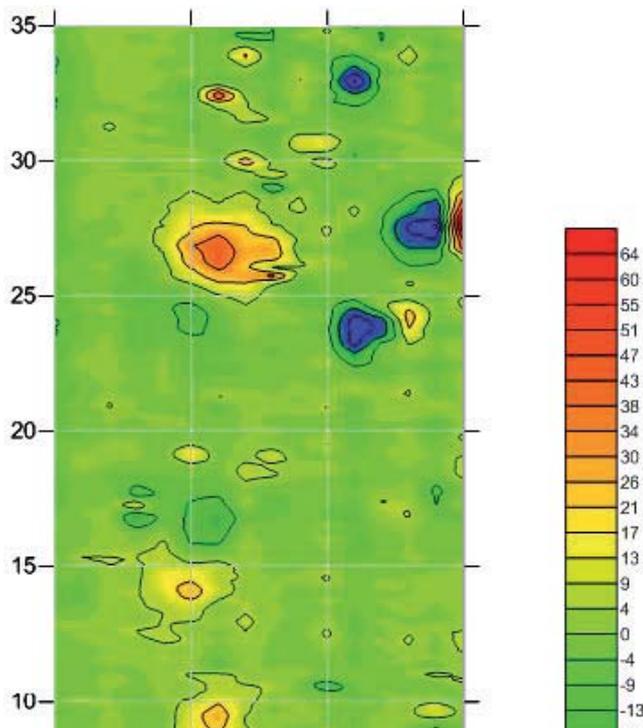
Evaluation models for magnetic anomaly data and for electromagnetic pulse induction data allow an interpretation of the located objects concerning their horizontal position, approximated depth and orientation. All object information is summarised in tabular form which can also be used as digging sheets for the excavation of targets.

The EPAS® data logger comes with a 'basic user level' and a password locked, hidden 'super user level' to access more functions.

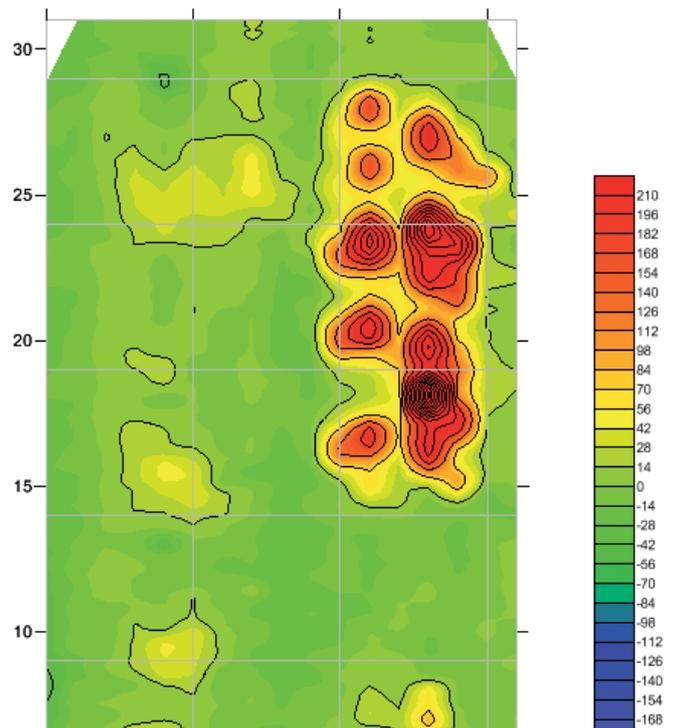
The EPAS® software comes with an internationalised interface, which can be translated into any of the languages and fonts needed. The languages English, French, Spanish, Italian, Khmer, Vietnamese and Lao are available off the shelf, others upon request.

## System requirements

Microsoft® Windows XP (32-bit version), Microsoft® Windows Vista (32-bit version), 2 GB RAM memory recommended. CD-ROM drive for installation. USB or SD card interface for import of detection data.



A magnetic anomaly map showing UXO contamination



An electromagnetic AEM (UPEX) map showing UXO contamination



EBINGER technology center Wiesbaum



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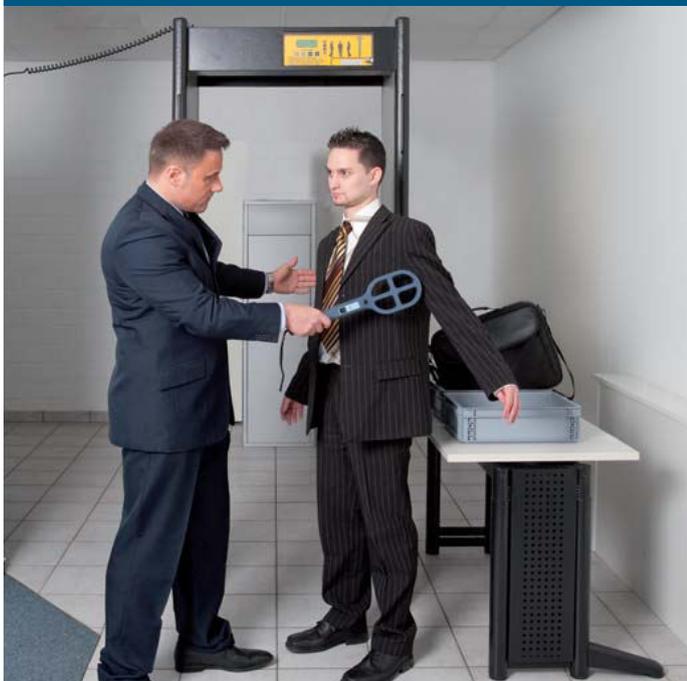


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- Security screening
- Inspection equipment for letters and luggage
- Inspection equipment for vehicles, parts of buildings and cavities
- Metal detectors: forensic police work

## Security technology



## Security screening

- SC 61 Hand-held
- SC 61 Z Hand-held
- SC METAL-TEC 1400 Hand-held
- SC VHD Hand-held
- SC 900 Metal detector gate
- SC 900 TS Metal detector gate
- SC 900 TS-WP Metal detector gate
- Metal detector gate accessories

## Inspection equipment for letters and luggage

- MAILEX® 10 Metal detector
- TR 70 Extra Large X-ray detector

## Inspection equipment for vehicles, parts of buildings and cavities

- EFIS® S Pocket inspection mirror
- EFIS® 1 Universal inspection mirror
- EFIS® 4 Under-vehicle search mirror
- EFIS® 5 Video inspection mirror
- Safe C Pocket inspection mirror

## Metal detectors for forensic police work

- UPEX® 728 Metal detector
- EBEX® 410 Detection system



## ■ General

The hand-held SC 61 is the result of a design study where technical and operational requirements were analysed together. The design ensures comfortable handling with little fatigue. The search head allows a thorough inspection of large areas. Persons can be checked fast and efficiently.

## ■ Mode of operation

The SC 61 operates on the damping system: the search head transmits an alternating electromagnetic field, which will be influenced by the presence of metal objects. Such electric changes modify the oscillation amplitude in the detector electronics and are converted into an audio and a visual alarm signal. In the case of high signal intensity it will switch automatically to a static mode. The dynamic operation mode allows automatic adjustment to homogeneous background interference. The detector does not interact with heart pacemakers, magnetic recording material or other technical devices. The device meets the international standards on electromagnetic compatibility.

## ■ Constructional features

The sturdy but lightweight construction ensures comfortable handling for continuous operation. The standard version operates on commercial dry batteries or on a rechargeable battery.

## ■ Delivery content

- Hand-held SC 61
- 9-V dry battery
- Operation manual

## Thorough and fast inspection

- Automatic adjustment
- Visual/audio alarm signal
- Dynamic operation mode
- No risk to pacemaker wearers and magnetic data carriers
- Ergonomic design
- Easy to operate
- LED battery control
- Headset socket



### Technical Data

Power supply	Battery 1 x ANSI E (E block) 9-V Rechargeable battery 1 x ANSI E (E block) 9-V NiMH (IEC HR 6F22)
Operation time*	Battery approx. 35 h Rechargeable battery approx. 12–15 h
Temperature range	approx. -10 °C to +55 °C
Dimensions	Handle approx. 32 mm Search head approx. 170 x 115 mm Total length approx. 420 mm
Weight	approx. 270 g (operational weight)
Operating frequency	9.5 kHz

\*Depending on temperature as well as quality of batteries used

### Highly sensitive with high resolution

- Detects all kinds of small metal objects
- Precise pinpointing
- Clear visual and audio alarm signals
- Dynamic operation mode
- Lightweight and robust
- Easy to operate
- Headset socket



### General

The hand-held metal detector SC 61 Z is applied wherever minimum amounts of metal have to be located – in penitentiary centers, law courts, forensics police work and forensic medicine or pre-inspection of letters but also in the precious metal processing industry.

The hand-held SC 61 Z is equipped with a highly sensitive cylindrical probe. Thanks to the concentrated electromagnetic field small metal objects e.g. razor blades can easily be pinpointed, even in the vicinity of surrounding metal structures. This would be difficult or impossible with a standard handheld detector. The SC 61 Z can be used even in surroundings with large metal structures (e.g. metal door frames or reinforced steel structures). The dynamic operation mode allows automatic adjustment to homogeneous background interference.

For the fast checking of persons or parcels the cylindrical probe can be used laterally over the area to be inspected. For detailed inspection of areas where an alarm signal was obtained the probe tip can be used. This allows the pinpoint localization of various collateral objects or wires.

### Mode of operation

The search head transmits an alternating electromagnetic field, which will be influenced by the presence of metal objects. Such electric changes modify the oscillation amplitude in the detector electronics which is processed and converted into an audio and a visual alarm signal. The device meets the international standards on electromagnetic compatibility (DIN VDE 08448 Part 4, European Standards, EN 50081-1 EN 50082-1, EN 55022 B, IEC 801-2, 801-3).

### Constructional features

Despite its lightweight the device is sturdy and designed for continuous operation. The detector is operational once it is switched on. Target acquisition is indicated by an audio alarm signal and by a red LED. A second LED (green) warns that the battery voltage is getting low.

### Delivery content

- Hand-held SC 61 Z
- 9-V dry battery
- Operation manual

Technical Data	
Power supply	Battery 1 x ANSI E (E block) 9-V Rechargeable battery 1 x ANSI E (E block) 9-V NiMH (IEC HR 6F22)
Operation time*	Dry battery approx. 35 h Rechargeable version approx. 12-15 h
Temperature range	approx. -10 °C to +55 °C
Dimensions	Handle approx. 32 mm Search head approx. 26 x 60 mm Total length approx. 377 mm
Weight	approx. 220 g (without batteries)
Operating frequency	approx. 9.6 kHz

\*Depending on temperature as well as quality of batteries used





**Ideal for all ferrous and non-ferrous metals**

- Covert operation
- Silent vibration alarm
- Small – handy – robust
- Simple to operate
- Inexpensive
- Immediately ready for operation

### ■ General

The practical SC METAL-TEC 1400 hand-held detector detects metal weapons, razor blades, handcuff keys and drugs wrapped in metal foil. Due to its small size and silent signals, it is perfect for covert detection.

### ■ Mode of operation

The water-resistant housing of ABS plastic, is very impact-resistant. Thanks to the vinyl-rubber handle, the detector can be held easily and securely. Using a Velcro strap, the SC METAL-TEC 1400 can be easily attached to the door, protection grille, organiser or the radio console in a vehicle's interior. The nylon belt holder supplied is perfect for mobile use outside the vehicle.

### ■ Constructional features

The SC METAL-TEC 1400 hand-held detector has a triple-axis detection field that identifies ferrous and non-ferrous metals in its proximity with a silent vibration signal. Handling is very simple: the fixed basic setting requires no calibration or additional adjustment. The high-performance 9-Volt alkali battery supplied lasts for approx. 2,000 checks of 15 seconds each.

### ■ Delivery content

- SC METAL-TEC 1400 hand-held metal detector
- 9-V dry battery
- Nylon belt holster
- Vehicle installation kit



### Technical Data

Power supply	Battery 1 x ANSI E (E block) 9-V Rechargeable battery 1 x ANSI E (E block) 9-V Ni-MH (IEC HR 6F22)
Operation time*	Battery approx. 8 h Rechargeable battery approx. 4 h
Temperature range	approx. -26 °C to approx. +54 °C
Dimensions	200 x 45 x 33 mm
Weight	approx. 250 g (operating weight)
Operating frequency	360 kHz

\*Depending on temperature as well as quality of batteries used

With discrete vibrating alarm – for mobile officers

- Covert operation with vibration alarm
- Visual display
- 360° all-round detection field
- Precise pinpointing
- Small – handy – robust
- Simple to operate
- Ready for operation immediately
- LED light in device tip



■ General

The SC VHD hand-held metal detector supports emergency response teams and security personnel in all aspects of security checks – e.g. at airports and schools, at public events, in law courts, the buildings of authorities and detention centres. The device gives a visual alarm signal by an LED display and a silent vibration signal. Hence, the SC VHD is particularly suitable for covert detection tasks.

■ Mode of operation

The hand-held detector shows consistent sensitivity around its entire 360° probe zone. Its sleek form and the concentrated field at the tip of the detector probe allow precise pinpointing. The LED built into the tip of the probe is very useful when working in the dark or when examining handbags, backpacks, etc. The SC VHD comes with an automatic basic setting, which does not require any subsequent adjustments. Therefore, it is ready for operation immediately after switching on.

■ Constructional features

The SC VHD hand-held metal detector is small and handy. It comprises a robust and impact-resistant plastic construction and can be comfortably carried almost anywhere on the body. The scope of delivery includes a belt holster. The battery exchange is a tool-free procedure. The battery status is monitored by two LEDs placed at the upper end of the handle: red signal = alarm, green light = activated, amber light = battery change.

■ Delivery content

- SC VHD hand-held metal detector
- 9-V dry battery
- Belt holster
- Operation manual

Technical Data

Power supply	Battery 1 x ANSI E (E block) 9 V Rechargeable battery 1 x ANSI E (E block) 9 V NiMH (IEC HR 6F22)
Operation time*	Battery approx. 70 h Rechargeable battery approx. 30 h
Temperature range	approx. -37 °C to approx. +70 °C (air humidity max. 95 %)
Dimensions	38-29 mm, tapering total length approx. 220 mm
Weight	approx. 200 g (operating weight)
Operating frequency	95 kHz

\*Depending on temperature as well as quality of batteries used





### ■ General

The SC 900 walk-through metal detector can be used in many aspects of security screening and offers a high detection performance: its VLF (very low frequency) technology is reliable at detecting metal. To this end, the indication signal varies depending on the volume of the metal detected. The high-speed detection circuit can check up to 60 persons per minute (with delays in the event of an alarm signal). The SC 900 is appealing in terms of its operating comfort and its good handling. After the metal detector has been turned on, a self-test routine takes place for some seconds monitoring all important functions. After a few seconds the metal detector is operational. It fulfils all important international guidelines (NILECJ-0601 L1-3/IP 53/IEC 348 Class 1 in accordance with CE; certified manufacture in accordance with ISO 9001-2000).

### ■ Mode of operation

The SC 900 comes with an expanded, even detection field comprising horizontal and vertical areas. Its sensitivity can be set in accordance with the relevant safety measures. In nine clearly distinguishable detection zones, the position of a suspicious metal object is accurately displayed – using optical elements in the side panels (red LEDs) and on the electronic control box's control panel. The security officer immediately sees that further checks are necessary. The device permits effective checks to be carried out on numerous people within a short period of time. The technology is microprocessor-supported and is digitally controlled.

### Powerful and versatile

- **Multi-zone design with 9 real detection zones**
- **10 sensitivity levels, in 246 individual steps**
- **Interruption-free emergency power supply (approx. 4 h)**
- **Simple programming**
- **Compact and reliable**
- **RS-232 interface**
- **Access security for control unit with key and 4-digit PIN code**

### ■ Constructional features

The SC 900 walk-through metal detector is suitable for mobile deployment. Its compact design facilitates transport of the components to different check points. Assembly and disassembly take less than 15 minutes. A lockable disc in front of the operating panel and a four-digit PIN code protect the control and display unit against unauthorised access: hence, changes to important settings – such as basic setting, sensitivity, system calibration, counters, ON and OFF – can only be carried out by authorised persons.

### ■ Delivery content

- SC 900 gate metal detector
- Power and synchronisation cables
- Assembly tools and materials
- Operating instructions, available in several languages

Technical Data	
Power supply	Operating voltage approx. 70 V AC-270 V AVC at 50-60 Hz
	Power consumption approx. 10 W in standby, 20 W with alarm
Operation time	Interruption-free power supply for approx. 4 h
Temperature range	approx. -20 °C to +70 °C
Dimensions	Inside: 760 x 2000 x 500 mm
	Outside: 830 x 2200 x 500 mm
Weight	approx. 46 kg
Shipping weight	approx. 65 kg

## Individually programmable for practical purposes

- Reliably detects ferrous and non-ferrous metals and alloys
- 20 sensitivity levels in 246 individual steps
- Excellent object distinction
- Visual display and audio indication
- SCADA data exchange using RS-232 interface
- Interruption-free emergency power supply (approx. 4 h)
- No risk to pregnant women, pacemaker wearers and magnetic data carriers
- Access security for control unit with key and 4-digit PIN code



## General

The SC 900 TS is a gate-type metal detector and corresponds to international standards (NILECJ-0601 L1-3/IP 54/IEC 348 Class 1 in accordance with CE; certified manufacture in accordance with ISO 9001-2000). It offers a high detection performance: its VLF (very low frequency) technology is reliable at detecting metals and alloys. Operation and handling are particularly easy and comfortable. It can be used immediately following activation. The electronics is calibrated by means of a special automatic feature.

## Mode of operation

The SC 900 TS walk-through metal detector comes with an expanded, even detection field comprising horizontal as well as vertical areas and can accurately detect metal objects in nine different detection zones. Each zone can be set separately: the detector has 20 sensitivity levels, each with 246 individual steps. The alarm is indicated by means of a controllable audio warning signal and red LEDs on the side panels. The additional 11-stage LED strip display (green-amber-red) on the control panel indicates the volume of metal. A graphic zone display identifies the precise position of the metal objects on the body. The predefined automatic programs of the SC 900 TS correspond to practical requirements. Further programming options can be easily carried out: the status is shown on an LCD screen. The standard setting is reactivated simply by pressing a button. In addition to German, the menu is also available in English, Spanish and Turkish.

## Constructional features

Thanks to its compact design, the SC 900 TS walk-through metal detector components are easy to transport. This simplifies its flexible deployment at various control points. Assembly and disassembly take less than 15 minutes. The SC 900 TS comes with an alarm counter, a five-digit counter for entry and exit (visible/invisible) and automatic error indication. A lockable disc in front of the operating panel and a four-digit PIN code protect the control and display unit against unauthorised access: as a result changes to important settings – such as basic setting, sensitivity, system calibration, counters, ON and OFF – can only be carried out by authorised persons. Various ports support the connection to closed-circuit television systems (CCTV) and SCADA data communication (using RS-232 interface). Additional control units, external alarms and a modem can be connected. Individual settings can be carried out at any time using a cable or modem (with PC software as an accessory).

For outdoor use or under difficult weather conditions the SC 900 TS-WP is recommended.

## Delivery content

- SC 900 TS gate metal detector
- Power and synchronisation cables
- Assembly tools and materials
- Operation manual, available in several languages

### Technical Data

Power supply	Operating voltage approx. 70 V AC-270 V AVC at 50-60 Hz
	Power consumption approx. 10 W in standby, 20 W with alarm
Operation time	interruption-free power supply für approx. 4 h
Temperature range	approx. -20 °C to +70 °C
Dimensions	Inside: 760 x 2000 x 500 mm
	Outside: 910 x 2000 x 500 mm
Weight	approx. 54 kg
Shipping weight	approx. 70 kg



## ■ General

The SC 900 TS-WP is a gate-type metal detector and corresponds to international standards (NILECJ-0601 L1-3/IP 55/348 Class 1 in accordance with CE; certified manufacture in accordance with ISO 9001-2000). It offers a high detection performance: its VLF (very low frequency) technology is reliable at detecting metals and alloys. Operation and handling are particularly easy and comfortable. After the metal detector has been switched off, a self-test routine takes place for some seconds monitoring all important functions. After a few seconds the detector is operational.

## ■ Mode of operation

The SC 900 TS-WP comes with an expanded, even detection field comprising horizontal as well as vertical areas and can accurately detect metal objects in nine different detection zones. Each zone can be set separately: the detector has 20 sensitivity levels, each with 246 individual steps. An alarm is indicated by means of a controllable audio warning signal and red LEDs on the side panels. The additional 11-stage LED strip display (green-amber-red) on the control panel indicates the volume of metal. A graphic zone display identifies the precise position of the metal objects on the body. The predefined automatic programs of the SC 900 TS-WP correspond to practical requirements. Further programming options can be easily carried out: the status is shown on an LCD screen. The standard setting is reactivated simply by pressing a button. In addition to German, the menu is also available in English, Spanish and Turkish.

## ■ Delivery content

- SC 900 TS-WP
- ABS rain-shelter
- Power and synchronisation cables
- External weatherproof power supply
- Assembly tools and materials
- Operation manual, available in several languages

## Weatherproof – Individually programmable for practical purposes

- For outdoor use under difficult weather conditions according to IP 55
- Detects ferrous and non-ferrous metals and alloys
- 20 sensitivity levels in 246 individual steps
- Metal distinction
- Visual display and audio indication
- Interruption-free emergency power supply (approx. 4 h)
- No risk to pregnant women, pacemaker wearers and magnetic data carriers

## ■ Constructional features

The SC 900 TS-WP has the same features as the SC 900 TS. In addition the side panels and electronics are additionally sealed and the mains cable is placed in a small external box. The metal detector comes with an ABS rain-shelter as standard, allowing outdoor use or under difficult weather conditions (IP 55).

Thanks to its compact design, the SC 900 TS-WP walk-through metal detector components are easy to transport. This simplifies its deployment flexibly at different control points. Assembly and disassembly take less than 15 minutes.

The SC 900 TS-WP comes with an alarm counter, a five-digit counter for entry and exit (visible/invisible) and automatic error indication. A lockable disc in front of the operating panel and a four-digit PIN code protect the control and display unit against unauthorised access: as a result changes to important settings – such as basic setting, sensitivity, system calibration, counters, ON and OFF – can only be carried out by authorised persons. Various ports support the connection to closed-circuit television systems (CCTV) and SCADA data communication (using RS-232 interface). Additional control units, external alarms and a modem can be connected. Individual settings can be carried out at any time using a cable or modem (with PC software as an accessory).

### Technical Data

Power supply	Operating voltage approx. 70 V AC-270 V AVC at 50-60 Hz
	Power consumption approx. 10 W in standby, 20 W with alarm
Operation time	interruption-free power supply for approx. 4 h
Temperature range	approx. -20 °C to +70 °C
Dimensions	Inside: 760 x 2000 x 500 mm
	Outside: 910 x 2000 x 500 mm
Weight	approx. 58 kg
Shipping weight	approx. 75 kg

### ■ Alarm activated CCTV record system for all SC 900 Walk-through metal detectors

- Video modes and playback modes
- Different video channels and PIP (Picture in Picture) features
- Image capture:
  - Alarm activated
  - Motion detect
  - Manual image capture
- Automatic recording
- Availability of archiving, moving, deleting and viewing previously captured images
- Video capture: length and speed selection controls
- Time stamp feature
- Image and Video Quality settings



#### Technical Data Alarm activated CCTV record system

Video output	NTSC and PAL
Image format	JPEG 800x600 Pixel
Video format	AVI 5fps 320x240 Pixel
File size per image	~80Kb (HQ) ~40Kb (SQ)
File size per video	~600Kb Mpeg, QVGA (320x240), 5fps

### ■ External battery group

- Permits the WTMD to work without power supply for approx. 8-12 h and prevents the accidental power off of the WTMD
- More independence for outdoor operation

### ■ ABS rain-shelter

- Protects the WTMD against water and dust
- Prevents damage to short circuiting of the electronics

### ■ Walk-through detector trolley

- For easy transportation of walk-through metal detectors by just one person
- Easy to assemble and dismantle
- All walk-through metal detectors can be equipped with the trolley

### ■ Remote control package

- Consisting of remote control software and specific modem
- The WTMDs can be controlled from a point a considerable distance away from their actual location
- With the SC 900 up to 16 devices, with the SC 900 TS and the SC 900 TS-WP up to 99 devices can be controlled.
- Settings such as security level, sensitivity settings and alarm/traffic counter can be changed and monitored.

*(Exception: With type SC 900 settings can be changed but there is no real-time-monitoring.)*

### ■ Bag for transportation

- For protected transportation of the dismantled walk-through detector
  - 2 bags: one for the 2 side panels, 1 for the electronic box
  - Suitable for all SC 900 walk-through metal detectors
- (Exception: There is no bag available for the SC 900 TS-WP)*



### Metal detector MAILEX® 10 for pre-inspection of letters, flat packages and parcels

- Fast and efficient
- Easy to use
- Visual and audio alarm signal
- Switch for dynamic and static operation

#### ■ General

The metal detector MAILEX® 10 is used to pre-inspect post items such as letters, flat packages and parcels for metal components which may be part of an explosive or incendiary device. The equipment detects ferrous as well as non-ferrous metals and alloys. Parcels with a height up to 55 mm and a width up to 270 mm can be inspected. It is recommended that letters and packages sorted out as containing suspicious metal parts should also undergo a check by X-Ray detectors (compare page 12 to 17). The combination of the two inspection methods offers a high safety level.

#### ■ Mode of operation

The sensitivity can be steplessly adjusted in accordance with the requirements. The detection of small metal objects can be suppressed to a certain extent.

The MAILEX® 10 can be operated in a static mode or in a dynamic alarm mode. In the dynamic mode the frequency of the alarm and the brightness of the LED will increase if a metal object is in the vicinity of the sensor. This facility permits the position of the object to be clearly located. The detector auto-resets after each alarm. In the static mode the metal detection audio alarm remains at a constant level and the LED flashes.

#### ■ Constructional features

The MAILEX® 10 comprises a 'slide'-like inspection ramp with integrated sensor and a bracket. Once the MAILEX® has been put into operation and tuned just let the mail slip down the chute. A suspicious letter or other object will be identified by an audio and visual alarm and can be separated out for further checking by the security personnel. The alarm mode can be selected, i.e. either audio and LED indication or just LED indication (silent mode).

#### ■ Delivery content

- Metal detector MAILEX® 10
- Charger
- Optional: soft case

Technical Data	
Power supply	by built-in rechargeable battery NiCd
Battery control	by flashing LED
Operation time	approx. 12 h
Temperature range	-5 °C to +40 °C
Dimensions	chute: approx. 320 x 80 x 450 mm (folded) chute: approx. 320 x 260 x 420 mm (in operation)
Weight	approx. 2.9 kg

## X-ray detector for large objects: packages, boxes, suitcases

- **Large inspection chamber capacity**
- **High-performance with conveyor belt (speed: 0.2 m/s)**
- **Material identification by means of colour coding**
  - **Blue: ferrous materials**
  - **Green: inorganic substances**
  - **Brown: organic substances**
- **Filter function for displaying outlines and wires**
- **Network connection for remote diagnosis and image archiving**



## ■ General

The TR 70 Extra Large X-ray detector is an innovation in post and luggage control. It scans large items of post, packages, courier deliveries, boxes and suitcases for sources of danger quickly and reliably. Dangerous and illegal contents such as explosives (e.g. chemical and biological bombs), drugs and weapons are identified and the item removed from the line prior to it being opened. In addition to the brilliant image display and a modern network connection, the TR 70 Extra Large excels in terms of its features that are additionally available: a DEXGIL software package for identifying explosives (in accordance with EU guidelines) and a TIP training program (Threat Image Protection) for the security personnel.

## ■ Standard image processing properties

- Impermeability threat alert
- Image archiving
- Multi-energy technology
- Variable penetration depth
- "High penetration": optimum contrast in denser areas of the image using a dedicated key
- "Low penetration": optimum contrast in less dense areas of the image using a dedicated key
- Optimum contrast: enables the optimum contrast to be selected by means of histogram equalization
- Edge enhancement: provides the amplification of edges and wires on the image
- Pseudo-color: this function assigns colors to different gray-scale levels in the image to increase the contrast between areas with similar absorption
- Energy stripping: this function permits a single material class or a combination of different material classes to be visualized on the monitor
- Contrast window: permits the expansion of gray levels within a window that can be positioned along the gray scale
- Reverse image
- Continuous zoom up to 64 fold and Rotozoom

## ■ Constructional features

The special feature of the TR 70 Extra Large is its flexible conveyor belt, which allows even large numbers of items to be checked quickly. The entire control unit, including the two screens and additional switches, can be externally operated. A stepless 64 fold zoom simplifies image examination. A colour assistant function allocates colours to the grey scale values on the screen to achieve contrasts for areas of similar absorption.

A filter function improves the display of outlines and wires. There is an additional material classification program: various material classes can be displayed individually or together in groups. A special information program supplies data on the current performance of the TR 70. Furthermore, the detector enables images to be archived and the results of previous inspections accessed.

Full AMX version (detects organic materials incl. explosives and drugs) is currently undergoing the ECAC certification process.

Technical Data	
X-ray generator	High-frequency: 30 kHz, 500 W Anode voltage: 150 kV
Detection system	Wire resolution: AWG 41 (guaranteed); AWG 42 (typical) Steel penetration: 36 mm (guaranteed); 38 mm (typical)
Power supply	single-phase 230 or 110 VAC +/- 10% 50/60 Hz +/- 3 Hz (mono-phase)
Temperature range	approx. 0 °C to +40 °C
Display	17" LCD-Monitor (1280 x 1024 Pixel) <b>Optional:</b> 19" LCD-Monitor (1280 x 1024 Pixel)
Dimensions (W x H x D)	Housing: 900 x 1,300 x 2,250 mm Tunnel: 605 x 410 mm
Conveyor belt	Height: 680 mm (adjustable) Speed: 0.2 m/s Load: max. 165 kg
Weight	550 kg



### ■ General

The EFIS® S is the basic version within the EBINGER range of inspection mirrors for police and military. It's intended use is the support of an inspection of vehicles at checkpoints and to search boats, aircrafts, trains and parts of buildings etc .

Although of small size when collapsed (pocket version) it can be extended to reach into cavities and voids.

### Pocket inspection mirror

- Compact shape
- Foldable
- For daylight and low light conditions
- Multiple application
- Protective isolation

### ■ Constructional features

EFIS® S can be used in engine bays and next to electrical wiring as the surface of the device comes with a protective isolation to avoid sparks or short circuits.

EFIS® S is supplied with two mirrors of different size which are very easy to exchange. The telescopic handle can be extended between 30 and 50 cm and carries a powerful LED placed next to the mirror. The device can operate for up to 90 hours on commercial disposable dry cells (AA) or from rechargeable NiMH cells.

Technical Data	
Measures	Mirror small approx. Ø 50 mm
	Mirror big approx. Ø 75 mm
	Telescope approx. 290 mm - 490 mm
Illumination	by LED
Power consumption	approx. 50 mA
Power supply	3 AA Mignonzellen
Weight	approx. 390 g
Operation time	approx. 90 h Dauerbetrieb
NSN no.	5120-12-386-4337

**Universal inspection mirror for thorough inspections**

- Rapid inspecting of difficult-to-access areas
- With illumination
- Extendable telescopic handle
- Various mirror heads
- Wheels for large mirror diameters
- Lightweight, rugged and weatherproof



**General**

The EFIS® 1 inspection mirror was designed to support the rapid inspecting of places which are difficult to access such as vehicle undersides, baggage racks, areas over or under furniture, hollows, cavities and intermediate spaces as well as difficult to access building parts. This assists police, customs, military and security company personnel in carrying out accurate and thorough inspections.

**Mode of operation**

The slightly convex form of the mirror enlarges the area able to be seen. Different sizes of mirror heads can be supplied on request. Mirror heads of Ø 300 mm and more are fitted with wheels.

**Constructional features**

The lightweight and rugged design of the handheld EFIS® 1 and its stepless adjustment facility make it easy to use in different working conditions.

**Delivery content**

- Mirror with telescopic handle and lamp
- Special version:
  - Square inspection mirror (150 x 250 mm)
  - Circular mirror (Ø 300 mm)
- Optional: polished stainless steel version

Technical Data	
Telescopic handle	Length approx. 1.100–2.100 mm
Version	Anodised aluminium, Rotation protected
Mirror head	approx. 120 x 170 mm (without protective frame), approx. 135° pivotable
Lamp type	Splashproof
Light	2.4 V/0.8 A Xenon bulb
Power supply	Dry battery 2 x D cells Rech. battery 2 x ANSI D
Operation time*	approx. 10-12 h
Temperature range	approx. -20 °C to +54 °C
Weight	approx. 1.3 kg (with lamp)

\* Depending on temperature as well as quality of used batteries



**Under-vehicle search mirror for efficiently inspecting the underside of vehicles**

- **Rapid inspection of difficult-to-access vehicle parts**
- **With illumination**
- **Angle of mirror head mechanically adjustable (optional)**
- **With wheels and dismantable for transportation**
- **Easy to handle, sturdy and weatherproof**

**General**

The wheeled search and inspection mirror EFIS® 4 is an efficient and simple to use tool for rapid inspecting of the underside of vehicles. This assists police, customs, military and security company personnel in carrying out accurate and thorough inspections.

**Mode of operation**

Three commercial 1.5 V C-cell batteries of type LR 14 provide the power for the LEDs. The batteries can be changed easily and rapidly. Upon request rechargeable Ni-MH batteries and a robust battery charger are available as accessories.

**Constructional features**

The design is ergonomic and the telescopic handle can be adjusted to suit tall and short operators. It can be extended to reach under large vehicles. The device is equipped with 10 splashproof LEDs of low power consumption. Upon request it can be delivered as a very robust special version of polished stainless steel. Optionally it can be delivered with remote mechanical adjustment of the mirror angle. A 200 x 400 mm sized mirror head is available as option.

**Delivery content**

- Inspection mirror EFIS® 4 with telescopic handle (wheeled)
- Optional: mechanically adjustable mirror head (pivotable: +/- 20°)

Technical Data	
Telescopic handle	Length approx. 1,100–1,225 mm
Mirror head	approx. 300 x 200 mm
Chassis	400 x 400 x 110 mm
Lamp type	Splashproof
Light	10 special LEDs
Power supply	3 x 1.5 C-cell batteries 3 x Ni-MH rechargeable batteries
Operation time*	approx. 70 h with dry batteries approx. 50 h with rech. battery
Temperature range	approx. -20 °C to +54 °C
Weight	approx. 4.0 kg

\* Depending on temperature as well as the quality of the batteries used

**Video inspection unit  
for a clear view of difficult-to-access areas**

- Provides a clear picture when used by day or by night
  - Wide extension and adjustment range
  - Compact video search head
- Versatile application**



■ **General**

The EFIS® 5 completes the SECON range of viewing tools as it applies a miniature CCD camera and a colour monitor. It is applied for professional inspection of wheel wells of aircrafts. The device is in widespread use with the police, customs, the military, prison service and commercial security companies.

■ **Mode of operation**

The high image quality of the TFT screen, the large extension range of the telescopic handle and the simple way in which it can be used make the EFIS® 5 a well liked and versatile tool in everyday work. The camera can be moved in various directions and tilted by a remote control knob in the handgrip. For work in poor light conditions or during the night the camera can be supplied with an LED infrared illumination system .

■ **Constructional features**

The telescopic handle of the EFIS® 5 is protected against involuntary rotation and can be extended up to 3 m. The video head is positioned at the top and the monitor and handgrip at the bottom of the device.

The camera is available in colour or black & white versions. Power is supplied from disposable 1.5 V by dry or rechargeable ones.

■ **Delivery content**

- Telescopic handle
- Camera module
- Colour monitor
- Battery compartment (optional: rechargeable battery pack)

Technical Data	
Telescopic handle	Length: approx. 1,250–3,000 mm
Camera-module	CCD-Chip 1/4" (colour) or CCD-Chip 1/3" (b&w)
Camera-resolution	Colour: 500 x 582 Pixel, 390 TV-Lines B&w: 500 x 552 Pixel, 400 TV-Lines Electrically adjustable range (approx. 170° stepless correction by hand)
Lens	F = 2.0/f = 3.5 mm
Light sensitivity	3 Lux (colour) or 0.1 Lux (b&w)
Auto-Shutter	1/50 + 1/100000s (colour) or to 1/100000s (b&w)
Screen	TFT active matrix 14.2 cm (5.6")
Resolution	960 x 234 Pixel
Power consumption	750–1,250 mA (without/with remote control)
Power supply	Dry battery 8 x C –cell 1.5V Rech. batteries 8 x C cell 1.2 V Ni-MH
Operation time*	Dry battery: approx. 3.5 h Rech. batteries: approx. 70 min
Temperature range	Camera: approx. –10 °C to +50 °C Screen: approx. 0 °C to +40 °C
Weight	approx. 4.0 kg

\* Depending on temperature as well as quality of used batteries



**Pocket inspection mirror:  
Basic model giving excellent results**

- Thorough and rapid inspections
- Versatile application by day and night
- Easy to use
- Very compact
- Collapsible

**General**

The pocket inspection mirror Safe C is the handy basic model for the rapid and thorough inspecting of difficult-to-access areas. The Safe C is in use by the police, customs, the military and commercial security companies for the inspection of cavities and intermediate spaces on ships, vehicles and aircraft with excellent results: efficient inspection and short checking times.

**Mode of operation**

The inspection mirror Safe C is a very handy pocket mirror that is quickly made ready for operation and can be stored away easily.

**Constructional features**

The telescope can be extended steplessly from 20 to 80 cm. Integrated in the grip of the telescopic tube is a battery compartment for two batteries of type AAA micro cells. The light can be switched on/off by rotation of the handgrip.

**Delivery content**

- Safe C pocket inspection mirror with telescope

Technical Data	
Telescopic handle	Length approx. 195–790 mm
Mirror frame	approx. 115 x 67 mm
Mirror	approx. 110 x 60 mm
Light	bulb 2.2 V
Power supply	2 x AAA micro cells
Power consumption	approx. 250 mA
Operation time*	approx. 4–5 h
Weight	approx. 0.32 kg

\* Depending on temperature as well as the quality of the batteries used

For very small ferrous and non-ferrous objects

- Exchangeable probes and large coils
- High detection range
- Precise ground compensation
- Saltwater compatible
- Visual and audio pulse analysing function
- Optional: digital measurement data recording and evaluation



■ General

The UPEX® 728 detector has proven its merits in forensic police work as applied by the German State Offices of Criminal Investigation and the Central Police Agency. It has a particularly high detection sensitivity and can localise even the smallest non-ferrous objects such as nuggets, coins, fragments, projectiles and similar. It is able to detect metal objects at depths at which the object would be hard to recover when using only light excavation tools. This is because the UPEX® 728 operates on the pulse induction principle and therefore has a very large detection range when used on land and also under water. Various probes and large loops can be fitted to the device in accordance with the particular detection task.

■ Mode of operation

The UPEX® 728 operates on the basis of the pulse induction principle (PI). This PI technology is saltwater compatible. Thanks to precise ground compensation, the UPEX® 728 also generates virtually interference-free results even in the case of non-cooperative ground such as laterite and basalt.

A pulse analysing function examines the object-inherent signature. The visual and audio signals vary in accordance with whether the object detected has short or long decay characteristics. This permits conclusions to be drawn on the objects detected, i.e. in respect of their material, depth and even size. In this way targeted searching becomes considerably easier and faster.

■ Constructional features

The UPEX® 728 permits the fast and thorough inspecting of large areas. The scope of delivery includes a large search head which improves productivity and extends the detection range for medium to large sized metal objects. The detection systems allow different working methods:

**Manual survey:** classic method - the metal objects detected are indicated by a visual and an audible alarm.

**Digital survey:** recording of digital measurement data by means of a mil. spec. PDA (Personal Digital Assistant) and computer-aided evaluation and mapping (special equipment) of the areas examined.

■ Delivery content

- Halo-type search head (ø 230 mm) with three-part telescopic handle
- Hand-grip and arm-rest
- Large loop (ø 260 cm)
- Electronics box
- Protective bag with carrying strap
- Battery charger
- Operating instructions
- Soft case for transport & storage

Technical Data	
<b>Dimensions</b>	
Standard halo head	approx. ø 230 mm
Large halo head	approx. ø 450 mm
Large loop	approx. ø 2550 mm
Telescopic handle	approx. 800-1,600 mm variabel
Electronics box	approx. 157 x 62 x 199 mm (W x H x D)
Softbag	approx. 730 x 145 x 400 mm
Power supply	built-in rechargeable lead battery 12 V/1.3 Ah, external power supply possible
Operation time*	approx. 7-8 h
Temperature range	approx. -10 °C to +50 °C
Operating frequency	depending on detection head approx. 300-550 Hz
<b>Weight</b>	
Standard halo head with telescopic handle	approx. 0.9 kg
Large halo head with telescopic handle	approx. 1.3 kg
Support frame with large loop	approx. 4.5 kg
Electronics box	approx. 0.6 kg

\* Depending on temperature



## ■ General

The EBEX® 410 metal detector was developed especially for forensic police work purposes and it reflects the result of intensive co-operation with professional users at the respective examination entities: State Offices of Criminal Investigation and the Federal Office of Criminal Investigation. Typical applications include the examination of persons and postal items, use at detention centre and prison examinations, inspections of the fabric of buildings as well as open spaces and shallow water.

The core of the EBEX® 410 is a highly-sensitive metal detector, which can be equipped with the appropriate additional components depending on the detection task. The distance between the detection head and the electronics cylinder can be extended with the aid of extension rods and cables.

## ■ Delivery content

- Electronics cylinder
- Extension rod
- Search heads (ø 145 and 260 mm)
- Cylinder probe (ø 22 mm)
- Extension cable
- EB 10 single-sided headset
- Piezoelectric loudspeaker
- Ni-MH rechargeable battery and battery charger
- Transport case with ABS inlay
- Operation manual

## Detection system with flexible modular structure for detecting metal

- Multi-component system for diverse detection applications
- Very high detection sensitivity
- Dynamic operation mode
- Simple handling: single-button operation
- Acoustic battery and activation control
- Comprehensive range of accessories

## ■ Mode of operation

The technology used in the EBEX® 410 is based on the proven EBINGER damping principle. The benefit of this method lies in its high detection sensitivity for very small metal objects as required in forensics. The device detects all electrically conductive media including thin metal foils, small iron fragments and objects made from ferrous and non-ferrous metals and alloys. Magnetic ground effects are reduced within wide limits. Power installations and the magnetic alternating fields of power lines have very little influence on the detection result. However salt water can cause interfering signals. Metal detection is indicated by an audio signal with high frequency range. Conclusions can be drawn on the size and distance of targets from the changes in alarm frequency and intensity.

## ■ Constructional features

The EBEX® 410 offers 9 accessories that can be fitted to the electronics cylinder, enabling numerous different detection tasks to be carried out depending on the combination of accessories selected. With each combination a compact, robust and user-friendly detector without cumbersome cables is created that can even be used inside buildings or on open ground. The device's electronics and the battery compartment are built into the electronics cylinder and are splashproof.

Technical Data	
Electronics cylinder	Length approx. 35 x 370 mm
Extension tube	Length approx. 20 x 485 mm
Cylinder probe	Length approx. 23 x 200 mm
Coils	ø approx. 145 und 260 mm
Overall length	approx. 520–1,550 mm
Transport case	approx. 480 x 380 x 120 mm
Power supply	Battery 1 x ANSI E (E block) 9 V Rechargeable battery 1 x ANSI E (E block) 9 V NiMH
Operation time*	Dry battery approx. 25 h Rech. battery (250 mAh) approx. 12 h
Operation weight	approx. 0.605–1.456 kg
Operation frequency	26 kHz

\* Depending on temperature as well as the quality of batteries used

## UPEX® 740 M

### PI large-loop metal detection system

- Deep search and large-area surveying
- High productivity of up to 2.5 ha per day and device
- Detects ferrous and non-ferrous metals and alloys
- Simple to operate
- Digital surveys



Basra: Area of released bombs

### Advantages

- Interface for data recording
- Satisfies IMSMA requirements
- Variable device configuration
- Pulse-induction system
- Suitable for use on land and on/in water
- Suppression of small items
- Linear and logarithmic display

### High productivity

The UPEX® 740 M PI large-loop detection system serves for deep search after metal objects of substantial size and for the rapid surveying of large areas. Depending on the particular vegetation, areas of up to 2.5 ha / day can be surveyed with one unit.

The UPEX® detects ferrous and non-ferrous metals as well as also alloys and is ideally suitable for searching for / detecting underground dumps, pipelines, stores, manholes and sewer shafts, UXOs and other metal objects of relatively large dimensions.

The system, which is in wide-scale use for BAC, is efficient, easy to use, to train and supercedes conventional type of metal detectors with standard small, halo search heads.

The UPEX® 740 M is fitted with a DELAY regulator so that undesired signals from small scraps of metal can be suppressed. This means that no time is wasted excavating small fragments / slivers of metal.



*Able to be used on and under water*



*Conventional surveying*

**Simple to operate**

- Short familiarization times
- Unambiguous and clear display
- Robust
- Low risk of the device being operated incorrectly
- Optional:  
Multilingual EPAD® data logger with EPAS® software  
Specific languages available on request

**Variable device configuration**

The metal detection system can be hand carried and is battery-operated. The carrier frame for the large loop can be assembled in 1 x 1 m or 2 x 2 m form, the latter format providing a larger detection area during surveying.

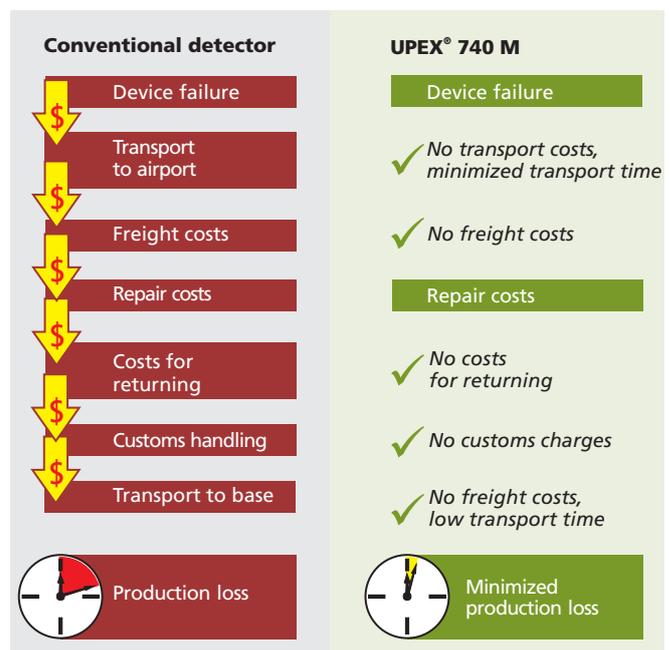
UPEX® 740 M can be supplied as a single or multi channel system. The single channel version can be used either by being man carried or by being mounted on a vehicle. The multi-channel arrangement is intended for use mounted on a vehicle.

A multi-channel arrangement can also be used in combination with other sensors. Thus, for example, the UPEX® system can be mounted on the front of a vehicle and a multi-channel MAGNEX® unit can be drawn behind the vehicle on a trailer

The UPEX® 740 M is constructed in modular form and individual sensors can be replaced. Thus, for example, the MAGNEX® probes are compatible with those of the manually guided devices.



Use mounted on a vehicle



Higher productivity through variable device configuration

### Work planning advantages

- Less excavation work
- Optimized planning of assets
- Clearance priorities can be laid down

The EPAS® software presents the data as measured as two-dimensional colour-coded maps and/or as ISO line charts. Each form of visualization can be configured separately in respect of limit values and sensitivity. The mapping data visualizations can be superimposed on geographical maps.

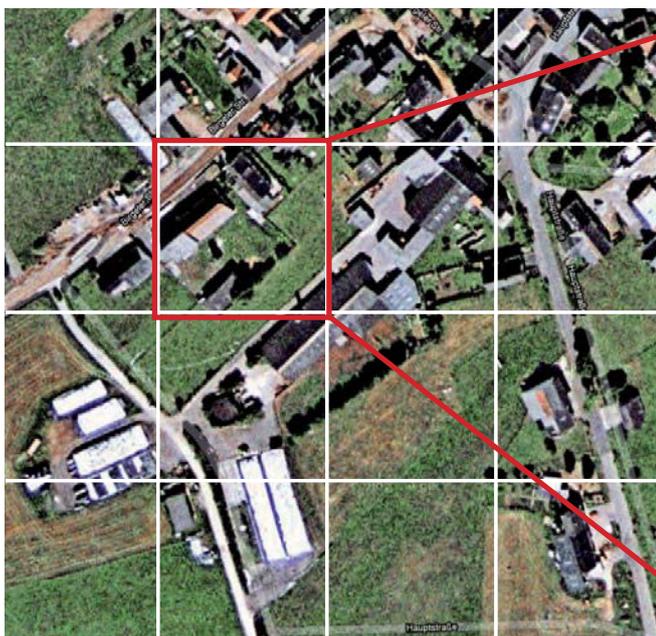
The mathematical models, which are used in the evaluation of the magnetic anomaly and pulse-electromagnetic induction data, facilitate interpreting of the objects that have been localized in respect of their horizontal position, approximate depth and orientation. All object data are summarized in tabular form, this information assisting at the excavating of target objects.

### Supported by EPAS®/EPAD®

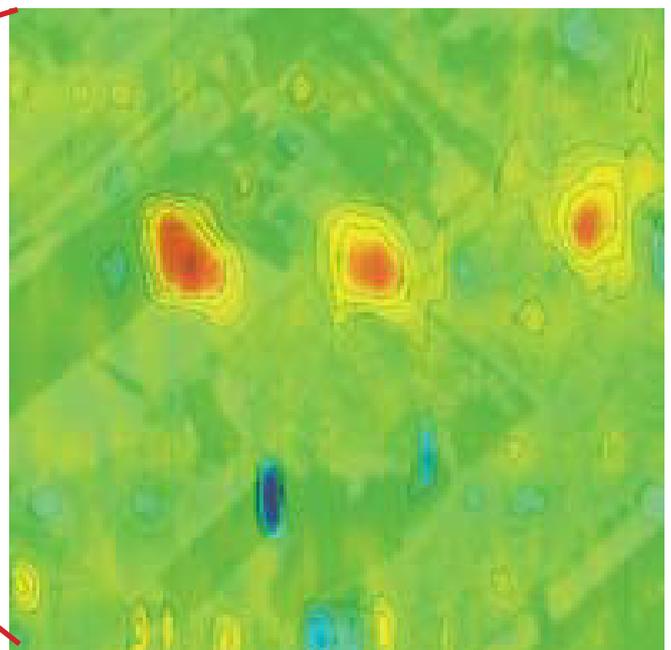
UPEX® 740 M supports digital mapping with the aid of a data output for recording data with the EBINGER EPAD® data logger.

The EPAD® data logger stores the values measured by the metal detector for subsequent processing and conversion into a coloured-coded map. This raw data is tamper-proof and is ideally suited for QA and QC systems. This version is in conformity with the requirements of GIS systems (geo-information systems) and supports IMSMA (Information Management System of Mine Action).

The geo-referencing system means that detection work and excavation work can be separated in respect of the time at which they are carried out. Thus, with analog detection as carried out up to the present time, excavation of the objects detected had to be carried out more or less directly after the detection/surveying process since otherwise there was the risk of the co-ordinates being lost. Today the geo-referencing option means that evaluation of the data can be carried out by superordinated posts at an intermediate stage with the opportunity then for disposal operations to be optimized.



Georeferenced survey map



Zoom of a grid square: colour-coded map produced following active surveying of the area

**Large penetration**

The metal detector functions in accordance with the EBINGER pulse-induction (PI) system which can be described in simple terms as an electromagnetic echo method. The detector contains a transmitter which sends out electromagnetic pulses. These pulses cause an object-specific response signal from electrical conducting material. These response signals are caught by the receiver of the detector, processed and displayed.

The large loop is characterized by its ability to detect medium-sized and large metal objects at relatively large ranges whereby the displaying of signals from residues of wire, nails or small pieces of scrap can be suppressed. This renders superfluous excavating unnecessary and speeds up the progress of work.

**Technical data**

<b>Power supply</b>	8 dry batteries, 1.5 V VLR 14 8 NiMH rechargeable batteries, 1.2 V 2.8 Ah
<b>Operating time*</b>	disposable dry batteries LR14: 20 hours for alkaline batteries rechargeable batteries NiMH: 12 hours for use with 1,2 V/3,8 Ah
<b>Temperature range</b>	approx. - 10 °C to + 55 °C
<b>Dimensions</b>	
Electronics box	approx. 270 x 90 x 80 mm
Battery container	approx. 290 x 105 x 50 mm
Large loop	approx. ø 2,550 mm
<b>Weight</b>	
Electronics box	approx. 1,100 g incl. batteries
Battery container	approx. 1,230 g incl. batteries
Large loop	approx. 2,500 g
<b>Signal display</b>	audio signal and galvanometer indication 0 - 100
<b>Detection mode</b>	linear, logarithmic, slow

\* Depending on temperature and quality of the batteries



Detection result: UXO in Luangprabang/Laos



UPEX® 740 M device electronics and EPAD® data logger

## Components of the UPEX® 740 M



Conventional survey



Securing of evidence following UPEX® sounding

Components of the EPAD®

- 1 Carrier frame system
- 2 Carrier belt
- 3 Electronics box
- 4 Large loop
- 5 Test plate
- 6 Holster for battery cylinder
- 7 Battery cylinder
- 8 Charger for battery cylinder
- 9 Power supply cable
- 10 Battery container for individual batteries
- 11 Set of dry batteries (or rechargeable batteries)
- 12 Charger for battery container
- 13 Transport case
- 14 Operating instructions
- 15 Transport bag for carrier frame system
- 16 Operating instructions, EPAD®/EPAS®
- 17 Charger for EPAD®
- 18 Bluetooth probe data module (BTSDM)
- 19 EPAD® data logger
- 20 Transport case for EPAD®



Assembly in the field



Survey of large areas

**DEFSECUR**

Defense & Security

Verteidigung & Sicherheit

Ein Unternehmen der A.R.G.U.S. Security Group \* Sicherheit ist Vertrauenssache - Vertrauen ist A.R.G.U.S. Security

## **7. Video - Management**



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**DEFSECUR**

Defense & Security

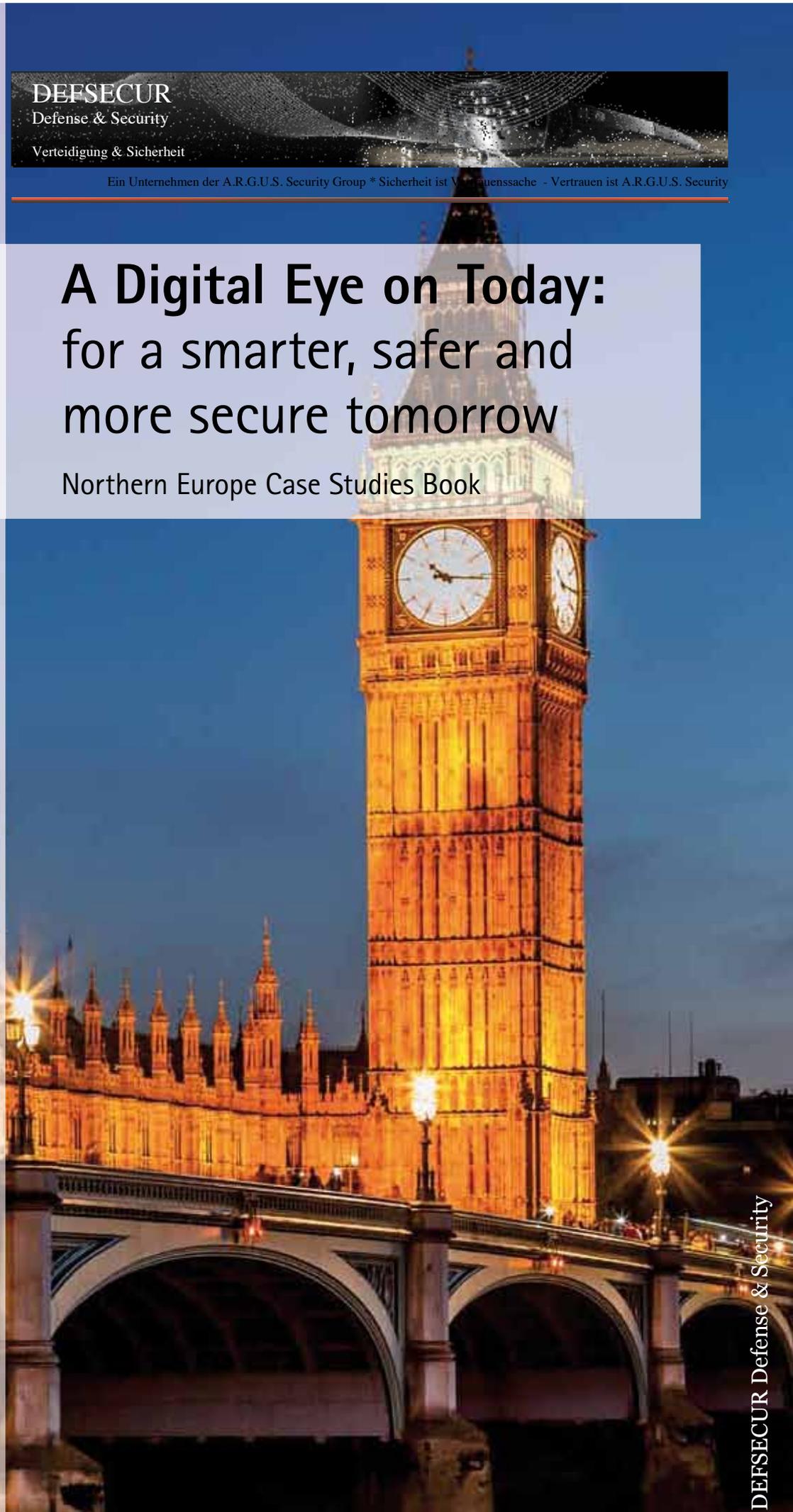
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# A Digital Eye on Today: for a smarter, safer and more secure tomorrow

Northern Europe Case Studies Book



## **AXIS Firmware 5.50 Overview**

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This document describes new and modified capabilities in the 5.50 Firmware Release. Note that available functionality varies depending on camera and encoder model. Check the release notes for details for each product.

### **1. Local Language Support**

Ability to alter the product user interface from English to other languages. Supported languages are; Brazilian Portuguese, French, German, Italian, Japanese, Korean, Russian, Simplified Chinese and Spanish. The local language files will be made available at [www.axis.com](http://www.axis.com) for each camera model immediately after the Firmware release. The selection and installation of the files do not require any knowledge in the English language.

### **2. Extended number of Privacy Masks**

Ability to configure up to 32 simultaneous privacy masks. The previous limit was 3 to 16, depending on product model. The number of available Privacy masks depends on the product model.

### **3. Extended Edge Storage Support**

Supporting memory cards up to 64 GB.

### **4. Text Overlay character set extension**

Ability to use non-western characters in the video text overlay. All left-to-right languages are supported.

### **5. Text Overlay Font Size**

Ability to select three different font sizes for the video text overlay in order to increase readability, especially helpful at high resolution video.

### **6. ONVIF Profile S conformance**

The ONVIF Profile S replaces the ONVIF Version 1.02. ONVIF has developed a Profile Concept to simplify identification of interoperable products. For more details please visit [www.onvif.org](http://www.onvif.org)

### **7. Text Overlay Message Action**

A product action that provides a way to display a user defined message in the text overlay upon a detected event. The message can be used to communicate information to the operator, visually mark video for later video forensics or provide an easy way for a user to validate event detectors during installation and configuration.

### **8. Support for common email services**

Ability to connect products to common email services that requires SSL/TLS security. Predefined profiles for Gmail, Hotmail, AOL and Yahoo are included in order to simplify configuration.

### **9. Edge Storage Disruption Detection**

Ability to be notified when Edge Storage detects disruptions. The event is used to notify administrators to quickly resolve issues, typically disk unavailable, read/write error, disk full or disk locked.

## **10. HTTPS Recipient**

Systems using HTTP notifications and uploads from the product can now do this in a secure way over HTTPS.

## **11. Send Video Clip Action**

Ability to upload a video clip to an FTP server or an email recipient upon an event. A media player with support for H.264 and Matroska File Format (MKV) is required to play the clip.

## **12. Live Stream Access Detection**

In some sensitive installations it may be necessary to notify people that someone is actively monitoring a camera (for example, in a conference room) using, a. The Live Stream Access Event may be used to control a nearby “alert light” connected to digital output port of the camera.

## **13. System Ready Event**

Ability to get notified when the product has booted and all services are initialized. The event is typically used to notify an operator (or system) that the unit has been restarted.

## **14. Improved AXIS Camera Applications**

The behavior for AXIS Cross Line Detection 1.x and AXIS Video Motion Detection 2.x will be improved in FW 5.50, compared to FW 5.40. The applications will be less prone to false detect on very small objects.

## **15. Centralized Certificate Management**

Certificates for HTTPS and 802.1x are now managed in one place. The firmware also includes a number of pre-installed CA certificates such as VeriSign, Thawte and GeoTrust. It is also possible to install additional CA certificates.

## **16. Improved Constant Bitrate Control**

The Constant Bit Rate (CBR) will now adjust to target bit rate quicker and smoother.

## **17. PTZ Control Error Notification**

Ability to be notified if malfunction in a mechanical PTZ is detected. The event is typically used to trigger a notification to the administrator/operator for service. The error detection is available for selected mechanical PTZ units.

## **18. Virtual Inputs**

Virtual Input may be used by clients to initiate Action Rules in the camera. Virtual Inputs extends the existing “Manual Trigger” with 32 additional virtual inputs.

## **19. SSH (Secure Shell)**

A command line interface to the products that may be used for specific support and maintenance activities. SSH extends the Telnet capabilities in order establish a secure remote command line connection. The Telnet and SSH capabilities are not enabled by default.

Get the Axis picture. Stay one step ahead.



#### **About Axis Communications**

As the market leader in network video, Axis is leading the way to a smarter, safer, more secure world – driving the shift from analog to digital video surveillance. Offering network video solutions for professional installations, Axis' products and solutions are based on an innovative, open technology platform.

Axis has more than 1,400 dedicated employees in 40 locations around the world and cooperates with partners covering 179 countries. Founded in 1984, Axis is a Sweden-based IT company listed on NASDAQ OMX Stockholm under the ticker AXIS. For more information about Axis, please visit our website [www.axis.com](http://www.axis.com).



## Do you know what's going on in your city?

When you're responsible for the safety and everyday function of a busy, sprawling urban center, anything can happen. Anywhere. Anytime.

At Axis, we understand the complexity of what you're facing – and why – every minute of every day. It's all about safeguarding precious lives and property – making it possible for people to enjoy everyday life in the world's bustling, vibrant cities.

That's why, as the world leader for network video, we make sure our solutions can handle it all – giving you crystal clear video surveillance in real time anywhere you need it. So you can build up a new level of safety and efficiency for better everyday life in your city.



Axis' IP video solutions give you a complete overview of what's going on in your city – from the usual to the unusual, from the big picture to important details – helping you fight crime and protect citizens.

## Proven in some of the most demanding urban environments in the world



“

*You can only do so much undercover work before drug dealers figure out who you are. Our wireless video surveillance system multiplies the eyes of our police officers on the street. With a wireless network, we can put cameras where they are most needed, and it's a capability that most cities and police departments can afford.*

”

Buffalo Police Captain Mark Makowski

**Buffalo, New York, USA**

Real-time surveillance helped police make their first five arrests while installation of the video network was still in progress, and Buffalo's Mayor reported already receiving more than 50 calls from Buffalo citizens requesting cameras on their street corners.

“

*A video surveillance system can constitute an effective deterrent against acts of vandalism, violence and theft. Axis network cameras allow the identification of various violations of the highway code and allow intervention in the case of accidents at road intersections and at-risk areas.*

”

Giancarlo Caprotti, Local Police Chief of the Municipality of Cassano D'Adda.

**Lombardia, Italy**

With more than 350 cameras installed to date, the area has recorded a reduction in crime thanks to the extremely sharp images captured by the cameras even in situations with limited visibility or difficult weather conditions.



“

*We now have an optical network infrastructure right across the city of Novi Sad. IP video surveillance with Axis network cameras was the next step in exploiting the full possibilities of this existing network. It is a huge benefit that the city now has a centralized video data center able to effectively oversee traffic and citizen safety.*

”

Vladimir Knežević, Chief Technical Officer, JKP Informatika Novi Sad

**Novi Sad, Serbia**

With the safety of citizens, right down to the youngest child, as top priority, Novi Sad has experienced better use of existing resources, improved city traffic logistics and enhanced the safety of its citizens.

**DEFSECUR**

Defense & Security

Verteidigung & Sicherheit

Ein Unternehmen der A.R.G.U.S. Security Group \* Sicherheit ist Vertrauenssache - Vertrauen ist A.R.G.U.S. Security

## Real-time video surveillance for safer, more efficient cities

Boosting city life and city image



# Bring your city together

Axis offers solutions to meet the unique challenges throughout your whole city – day and night. Your security center is connected to every camera with live video – even wirelessly from deployable units. Plus, you can share real-time video with police and other first responders to ensure quick and appropriate response.



Products to fit every part of your city



**AXIS P13 Series**  
Robust, fixed network cameras with superb video quality and up to 5-megapixel resolution. Perfect for monitoring public buildings, intersections and more.



**AXIS Q19 Thermal Camera Series**  
Detect people, objects and incidents in complete darkness and difficult conditions such as smoke, haze, dust and fog. Ideal for securing both indoor and outdoor areas 24/7.



**AXIS Q60 Series**  
High-speed domes with up to 35x optical zoom for impressive detail in the most demanding surveillance applications. Exceptional coverage for large areas.



## Discover some of Axis' leading-edge solutions for IP surveillance

Axis offers a range of innovative and practical solutions to meet your every surveillance need, including superior HDTV image quality, low-light technology and PTZ functionality. Imagine the possibilities.

### Thermal cameras

Axis thermal network cameras allow you to detect and act on suspicious activity 24/7. By visualizing the heat radiating from people, vehicles and objects, these cameras enable you to see through complete darkness, smoke and other challenging conditions.

### Lightfinder technology

You can also benefit from our low-light camera series based on Axis Lightfinder technology, which maintains colors even in very dark conditions to enable anonymous detection.

### Video intelligence for efficient surveillance

Axis cameras come with a number of intelligent video applications to help you increase surveillance efficiency, including motion/audio detection and tampering alarms with automatic alerts.

### PTZ (pan/tilt/zoom) functionality

Axis PTZ cameras give you the ability to detect movement from great distances and zoom in to see what's happening (during a gathering in a square, for example). Cameras can be placed strategically and inconspicuously – even above eye level to protect building façades – to give you total overview.

### Greater coverage – fewer cameras

With HDTV, Axis brings you a widescreen format, sharper images and better color fidelity than standard analog TV. HDTV covers larger scenes and provides at least three times better resolution than analog CCTV for extraordinary detail that facilitates positive identification in investigations.

View of four analog cameras



View of one HDTV camera

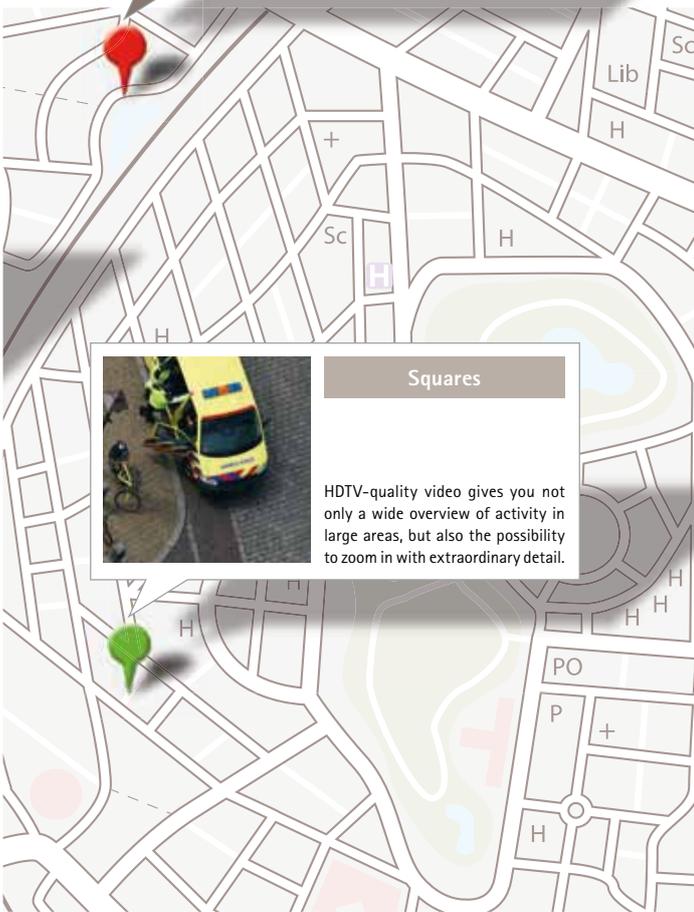


What do you need to see? For a wide overview, one HDTV camera covers a larger scene than four 4CIF analog cameras. Or, for those areas where you need extreme detail, HDTV provides exceptional resolution.



#### Control center

Maintain central control with constant connection to all cameras. Plus, share live video to mobile devices for better coordination with first responders.



#### Squares

HDTV-quality video gives you not only a wide overview of activity in large areas, but also the possibility to zoom in with extraordinary detail.



#### Axis video encoders

Enable a cost-efficient migration from your existing analog systems, giving you instant access to the market's widest array of new digital benefits.

## 8 questions to ask before investing in a surveillance solution

### 1. Will our cameras show movement and detail in dark, foggy or smoky conditions?

Tip: ask to see real images from thermal and low-light cameras

### 2. Will we be able to follow and identify people or objects, even from far away?

Tip: ask about functions that allow you to pan, tilt and zoom in from a distance

### 3. Do we have to buy everything new or can we use some of what we already have?

Tip: make sure every part of your new solution will work with what you need to keep from previous installations

### 4. Will we have to replace everything again when new technology comes out?

Tip: find out if the solution is future-proof so you don't waste any of the time and money you're spending on surveillance today

### 5. Can we connect and work with other venues and private surveillance systems in our city?

Tip: verify that the solution has open standards and can integrate with any cameras, software, etc. on the market

### 6. Do we have to buy extra equipment to install cameras outdoors?

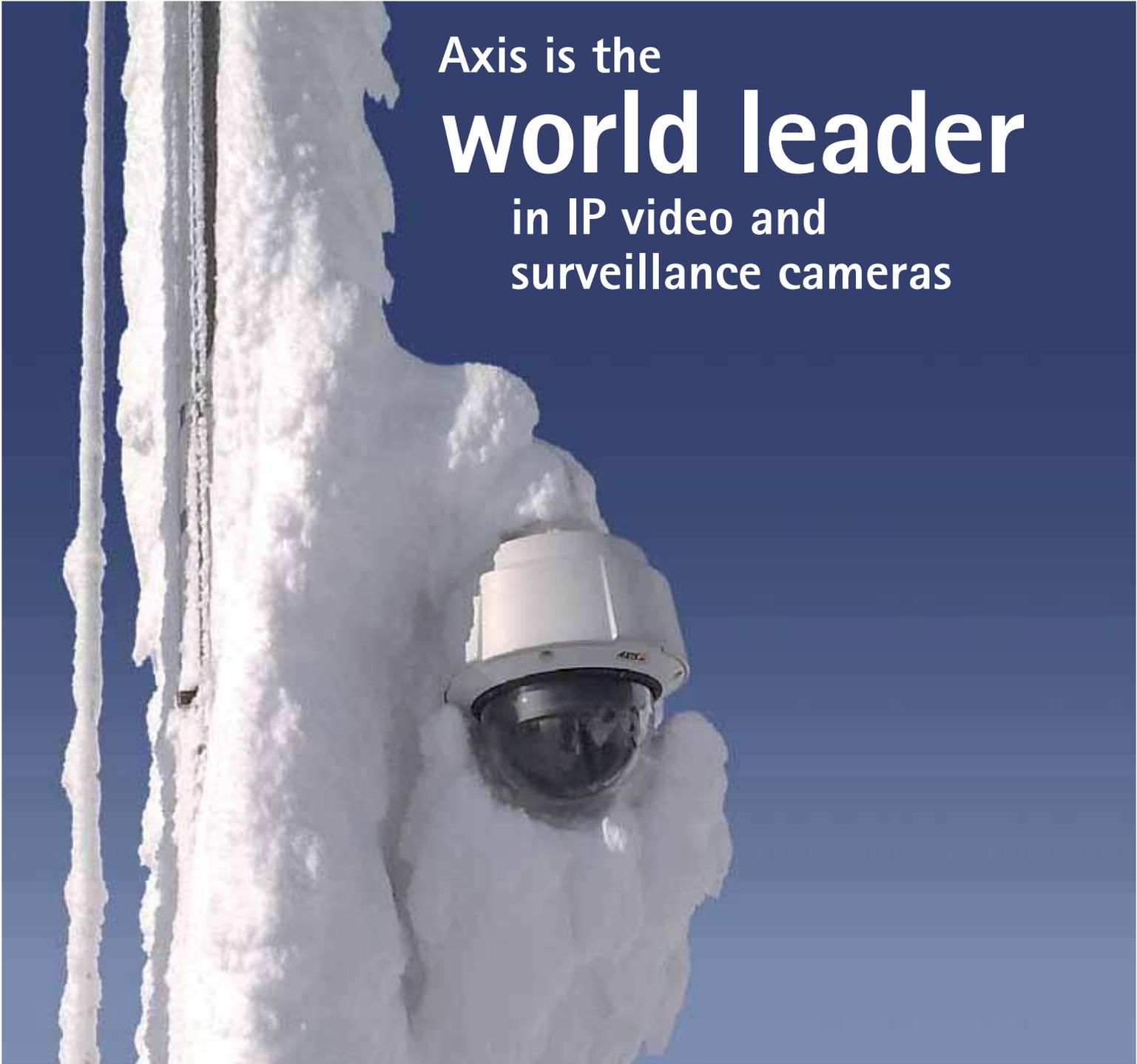
Tip: look for cameras that are outdoor-ready straight out of the box

### 7. How vulnerable are the cameras to vandalism?

Tip: ask if the cameras are vandal-proof, offering automatic tampering alerts, etc.

### 8. Will we be able to track anything, anywhere live?

Tip: make sure the entire solution connects to a centralized surveillance center with real-time video from all cameras – even deployable and mobile



Axis is the  
**world leader**  
in IP video and  
surveillance cameras

**And your #1 choice for quality and reliability  
in all conditions.**

- > The founder of the world's first network camera
- > The world leader in network video, driving the shift from analog to digital
- > Sweden-based company, with over 16 years of experience in IP video and nearly three decades of network know-how
- > Installations worldwide in sectors ranging from retail and transportation to education and city surveillance
- > Dedicated partner network offering unrivaled expertise
- > Solutions delivering enduring results, even in the most extreme conditions and remote locations
- > Open standards only, for easy integration and scalability

**Get the Axis picture. Stay one step ahead.**  
Visit [www.axis.com](http://www.axis.com)

“ Analogue-based CCTV has no future because it is not able to absorb some of the more recent technology developments such as wireless, Power over Ethernet, progressive scan, megapixel or compression enhancements including H.264. It's standing still whilst the IP equivalent is benefiting from a great many innovations all the time. I simply could not countenance going to the board of governors of the college to recommend putting in a CCTV system, which would be no less expensive, but would be obsolete within 10 years. ”

Domingo Rodriguez-Baez, Assistant Estates Manager, Knowsley Community College

## AXIS Q60-C PTZ Dome Network Cameras

High-speed PTZ domes with active cooling.



- > Operate in temperatures up to 75 °C (167 °F)
- > Easy and reliable installation: dust- and waterproof, meet military standard
- > Powerful zoom; resolutions up to HDTV 1080p
- > SFP slots for fiber, RJ-45 connections
- > I/O for alarm in/out

The top-of-the-line AXIS Q60-C PTZ Dome Network Cameras provide exceptional and reliable surveillance in environments such as deserts, where high ambient temperatures and solar radiation require cameras to operate in extreme heat. The robust AXIS Q60-C cameras are ideal for use at construction and open-pit mining sites, along pipelines, and for city surveillance.

With a built-in active cooling system, AXIS Q60 cameras can operate in temperatures up to 75 °C (167 °F). The robust cameras meet the tough military standard, MIL-STD-810G, ensuring reliable operation in harsh weather conditions such as sandstorms. Installing the outdoor-ready cameras is fast and easy. No additional housing is required.

AXIS Q60-C camera models support resolutions ranging from D1, up to HDTV 1080p. They enable wide area coverage with high-speed 360° pan and powerful zoom for capturing details.

The supplied media converter switch allows AXIS Q60-C cameras to be connected in a daisy chain to the network using standard network or fiber optic cables that help lower the cost of installing the cameras over long distances. The media converter switch also enables the cameras to connect to external alarm devices via two configurable input/output ports, and to 12 V power.

AXIS Q60-C cameras, which support day/night functionality and H.264 compression, ensure the delivery of high-quality video even under extreme conditions.



*Mounting brackets are sold separately.*



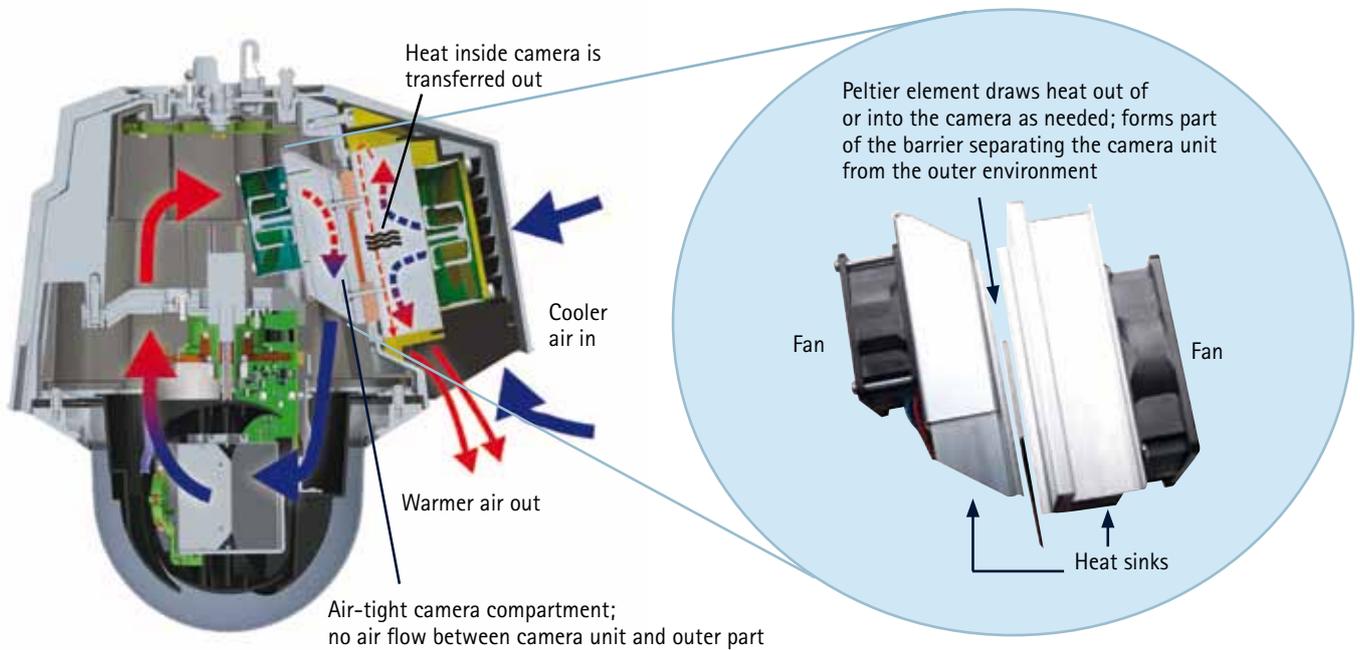
# Exceptional video surveillance in searing heat

AXIS Q60-C PTZ domes ensure reliable surveillance in demanding environments. The cameras are tested to meet the tough MIL-STD-810G standard for high temperature, temperature shock, radiation, rain, humidity, salt fog, sand and dust.

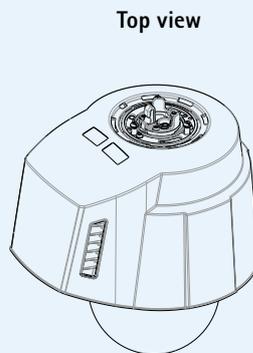
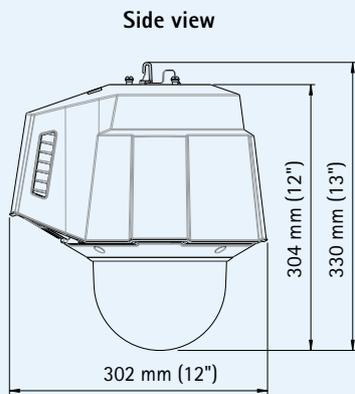
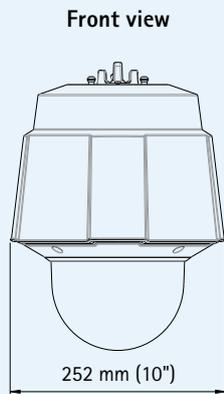
With precision pan/tilt performance, the high-speed AXIS Q60-C cameras can follow a walking person or pan at a speed of 450° per second. The cameras also have powerful zoom. AXIS Q6035-C, for example, can capture the license plate of cars up to 275 m (900 ft.) away. The cameras support full frame rate video in resolutions up to HDTV 1080p (1920x1080), wide dynamic range, automatic guard tour, alarm management and intelligent video capabilities such as autotracking and Active Gatekeeper.

## Engineered for handling extreme heat

AXIS Q60-C cameras use Peltier technology to increase the operating temperature to 75 °C (167 °F). The advanced climate control also handles rapid temperature changes to eliminate condensation on the clear dome cover. The system ensures that the cameras always operate at an optimal temperature to reduce wear and tear to maintain the cameras' lifetime.



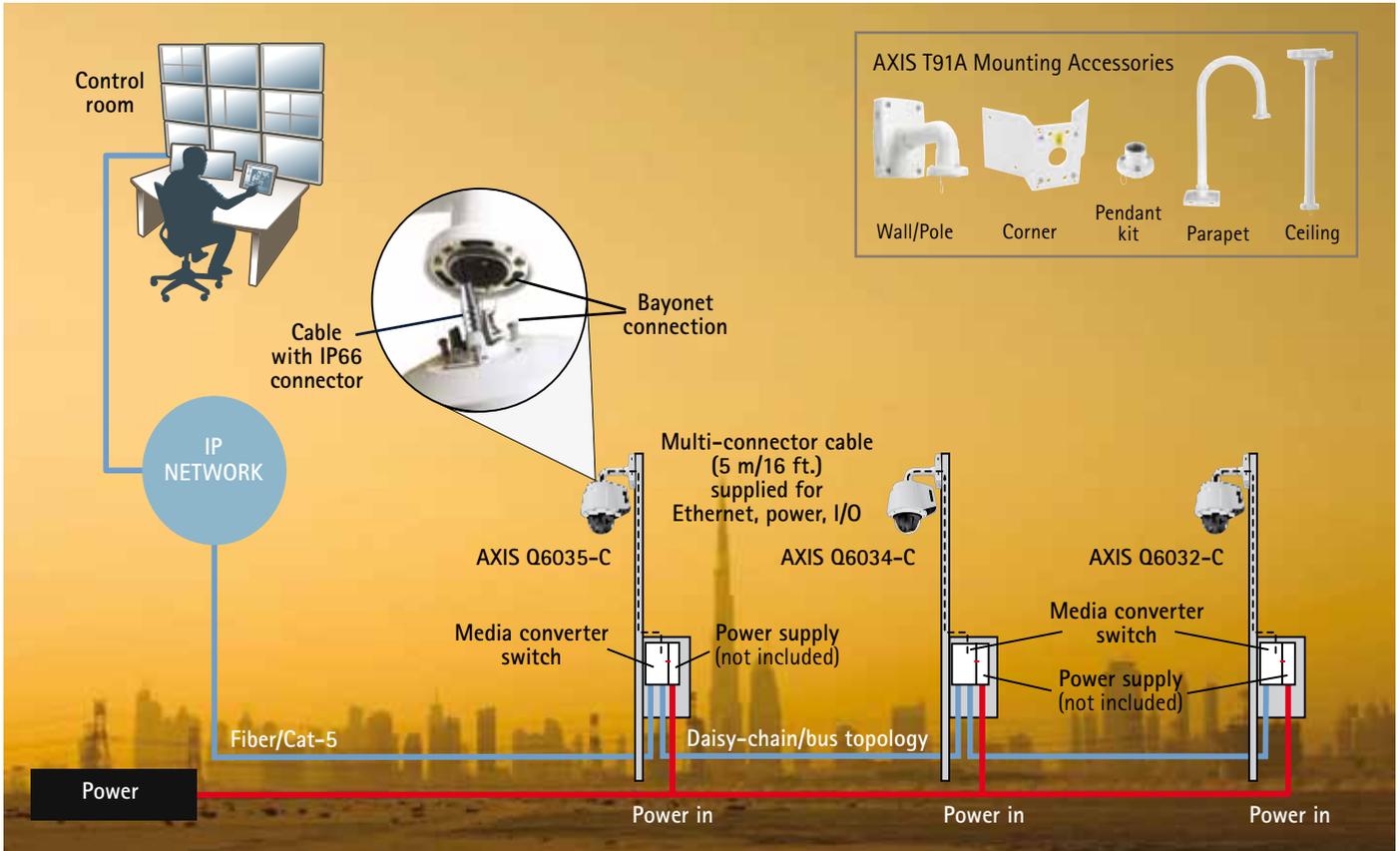
### Dimensions: AXIS Q60-C PTZ Dome Network Cameras



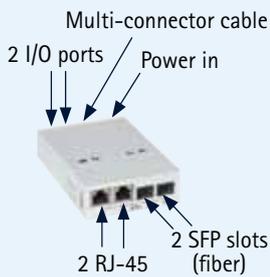
# Easy installation and reliable performance

An AXIS Q60-C connects to the supplied AXIS T8605 Media Converter Switch using a multi-connector cable, which attaches to the camera with a simple click. Through the media converter switch, the multi-connector cable enables the camera to receive power, and send and receive data to and from external alarm devices and the network. Two SFP slots and two RJ-45 connectors in the media converter switch give installers the flexibility

to network the cameras cost-effectively over long distances in a daisy chain or in a ring topology for increased reliability in the event of a single point of failure.\* The RJ-45 connectors can also be used for connection to complementary cameras such as a thermal camera or temporarily to a laptop to service the system locally. With bayonet mounting, AXIS Q60-C cameras attach easily to Axis' standard mounting accessories.



## AXIS T8605 Media Converter Switch



<b>Data rate</b>	RJ-45: 10/100 Mbps; SFP: 100/1000 Mbps
<b>Network cables</b>	Shielded category 5 or higher, all fiber
<b>Connectors</b>	2x RJ-45 connectors 2x SFP slots (e.g. for SFP optical fiber modules) 2 configurable alarm input/output ports 1x power
<b>Power</b>	12.0 - 13.2 V DC, min. 75 W (power in from power supply)
<b>Display &amp; indicators</b>	Power 5x Network
<b>Compliance</b>	RoHS, REACH, WEEE, CE, EN 50022, IEC 60715, AS2756

<b>Approvals</b>	<b>EMC:</b> EN 55022 Class A, EN 55024, VCCI, FCC Part 15 Class A with STP cabling, KCC <b>Safety:</b> IEC/EN/UL 60950-1, IEC/EN/UL 60950-22
<b>Operating conditions</b>	-40 °C to 75 °C (-40 °F to 167 °F)
<b>Storage conditions</b>	-40 °C to 75 °C (-40 °F to 167 °F)
<b>Installation</b>	Bracket Mount DIN Clip (included) for a 35 mm DIN rail
<b>Dimensions</b>	150 x 100 x 30 mm (5.9" x 3.9" x 1.2")

## AXIS T8008 PS12 (Optional accessory)

<b>Power in</b>	90 - 264 V AC (operating) 115 - 230 V AC (nominal) 47 - 63 Hz
<b>Power out</b>	12.5 V DC +/-0.2 V DC, 85 W

<b>Approvals</b>	EMI Class B, EN61000 Immunity IEC 68-2-27, IEC 68-2-6/IEC 721-3-2, UL+CSA 60950-1 2nd Edition, UL+CSA 60601-1 2nd Edition, CB Scheme 60950-1, EN 61347-1/-2-13, IP64
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<b>Operating conditions</b>	-40 °C to 75 °C (-40 °F to 167 °F)
<b>Storage conditions</b>	-40 °C to 75 °C (-40 °F to 167 °F)
<b>Dimensions</b>	178 x 102 x 38 mm (7" x 4" x 1.2")

\*IGMP filtering not supported



## AXIS Q16 Netzwerk-Kamera-Serie

Herausragende Bildqualität bei schwierigen Lichtverhältnissen.



- > Lightfinder-Technologie mit erweiterter D1-Auflösung (768x576) (AXIS Q1602/-E)
- > WDR Dynamic Capture bei HDTV 720p (AXIS Q1604/-E)
- > Mehrere H.264-Videoströme
- > Power over Ethernet
- > Modell für den Außenbereich mit Arctic Temperature Control (Arktische Temperaturkontrolle)

Die Netzwerk-Kamera-Serie AXIS Q16 umfasst fest installierte Kameras für den Innen- und Außenbereich, die eine herausragende Bildqualität bei schwierigen Videoüberwachungsverhältnissen wie schwachem oder wechselndem Licht bieten.

Durch die einzigartige Lightfinder-Technologie reagieren die AXIS Q1602/-E-Kameras auf schwaches Licht und können so in der Dunkelheit die Umgebung problemlos erkennen. Dank Wide Dynamic Range (WDR) Dynamic Capture kann die AXIS Q1604/-E einheitliche Bilder ohne zu dunkle oder zu helle Stellen liefern.

Die AXIS Q16-Serie reicht von Kameras mit erweiterter D1-Auflösung bis hin zu den AXIS Q1604 und AXIS Q1604-E-Kameras mit 1 Megapixel, die auch HDTV 720p-Video bieten.

Power over Ethernet (PoE, IEEE 802.3af) erleichtert die Installation, da keine Netzkabel benötigt werden. Die Kameras haben auch einen SD/SDHC-Speicherkarteneinschub zur lokalen Speicherung von Aufzeichnungen.

Die IP66-konformen Modelle AXIS Q1602-E und AXIS Q1604-E für den Einsatz im Außenbereich arbeiten bei Temperaturen von -40 °C bis 50 °C und verwenden High PoE. Sie sind mit der Funktion "Arctic Temperature Control" (Arktischer Temperaturkontrolle) ausgestattet, die das Kameramodul vorwärmt und einen Start auch bei sehr niedrigen Temperaturen nach einem Stromausfall garantiert.



# Kameras mit hoher Lichtempfindlichkeit und Wide Dynamic Range für den Einsatz im Innen- und Außenbereich

Die AXIS Q16-Serie bietet herausragende, fest installierte Netzwerk-Kameras mit Funktionen für anspruchsvolle Anwendungen. Die AXIS Q1602/-E eignet sich für Umgebungen mit schlechten Lichtverhältnissen und die AXIS Q1604/-E für die Überwachung bei stark wechselndem Licht.

## Einfache Installation mit Fokusassistent, fernsteuerbare Fokussier- und Zoomfunktion und Pixelcounter

Das Einstellen des Fokus bei der AXIS Q16-Serie ist einfach und erfolgt mit dem Fokus-Assistenten, der mit einem blinkenden grünen LED-Licht anzeigt, wenn ein Bild nach manueller Einstellung des Objektivs im Fokus ist. Zusätzlich bietet er ein fernsteuerbares Auflagenmaß, das eine Feineinstellung des Fokus über einen Computer ermöglicht. Mit Hilfe des Pixelcounter kann der Kameramonteur sicherstellen, dass die Pixelauflösung eines Objekts den behördlichen Bestimmungen bzw. den speziellen Kundenanforderungen für die Identifikation entspricht.

## Lightfinder-Technologie

Die AXIS Q1602/-E beinhaltet die revolutionäre Lightfinder-Technologie von Axis. Die herausragende Leistung bei schwacher Beleuchtung resultiert aus der klugen Entscheidung bezüglich Sensor und Objektiv sowie der Feinabstimmung der Bildverarbeitung. Im Vergleich zu analogen Kameras bietet die Lightfinder-Technologie eine bessere Auflösung und naturgetreue Farben, speziell in Umgebungen mit schwacher Beleuchtung. Die Rauschunterdrückung ist in der Lightfinder-Technologie erheblich besser als in den auf dem Markt erhältlichen analogen Kameras. In Kombination mit der Lichtempfindlichkeit des Sensors wird somit eine ausgezeichnete Bildqualität erzielt. Weitere Informationen über die Lightfinder-Technologie finden Sie unter: [www.axis.com/corporate/corp/tech\\_papers.htm](http://www.axis.com/corporate/corp/tech_papers.htm)

## Wide Dynamic Range – Dynamic Capture

Die AXIS Q1604/-E Netzwerk-Kameras mit Dynamic Capture bietet ideale Lösungen für die Überwachung bei sich stark verändernden Lichtverhältnissen, zum Beispiel wenn das Licht durch ein Glasfenster oder einen Eingang fällt und sowohl dunkle als auch helle Bereiche entstehen. Bei diesen anspruchsvollen Szenarien ermöglicht die AXIS Q1604/-E dem Benutzer, klar und deutlich Personen und Objekte zu unterscheiden. Zusammen mit einer fortschrittlichen Bildverarbeitung entsteht als Ergebnis Videomaterial mit außergewöhnlicher Klarheit und Schärfe ohne zu dunkle oder zu helle Bildbereiche.

## Sofort einsatzfähige Modelle für den Außenbereich

Mit den AXIS Q16-E Netzwerk-Kameras lassen sich bei der Installation Zeit und Kosten sparen, da sie sofort bei Lieferung einsatzbereit und im Außenbereich montiert werden können. Die IP66-konformen Kameras sind geschützt vor Staub, Regen, Schnee und Sonneneinstrahlung und sind für den Einsatz bei Temperaturen bis zu -40 °C geeignet. Die Stromversorgung der Kameras erfolgt über Power over Ethernet, was die Installation erleichtert, da kein separates Netzkabel erforderlich ist. Eine integrierte, Feuchtigkeit entziehende Membran sorgt dafür, dass während der Montage keine Feuchtigkeit in die Kamera gelangt. Die Kameras sind so konstruiert, dass sich problemlos ein Infrarotstrahler unter dem Gehäuse anbringen lässt. Im Lieferumfang sind eine Wandbefestigung und ein Sonnenschutz enthalten.



## Lightfinder-Technologie in Netzwerk-Kameras der Reihe AXIS Q1602/-E



Referenzbild



Hochwertige Überwachungskamera



AXIS Q1602/-E Netzwerk-Kameras

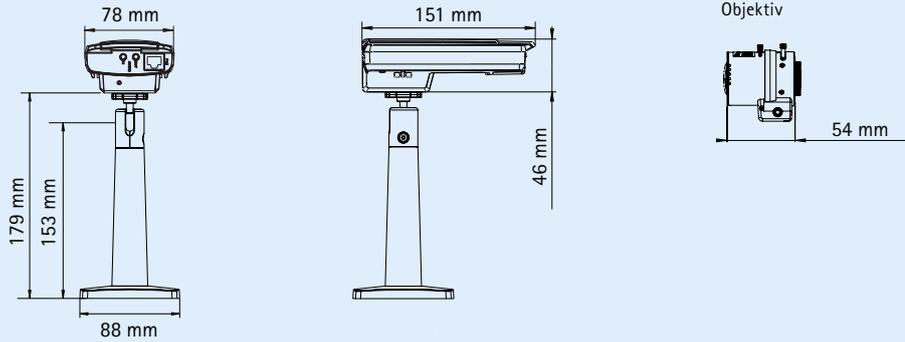
## Technische Daten – AXIS Q16 Netzwerk-Kamera-Serie

Kamera	
<b>Modelle</b>	<p>AXIS Q1602: Erweiterte D1 (768x576)-Auflösung, für den Innenbereich</p> <p>AXIS Q1602-E: Erweiterte D1 (768x576)-Auflösung, für den Außenbereich</p> <p>AXIS Q1604: 1 MP/HDTV 720p, Innenbereich</p> <p>AXIS Q1604-E: 1 MP/HDTV 720p, Außenbereich</p>
<b>Bildsensor</b>	<p>AXIS Q1602/-E: 1/3" RGB CMOS/progressive Abtastung</p> <p>AXIS Q1604/-E: 1/3" RGB CMOS/progressive Abtastung</p>
<b>Objektiv</b>	<p>P-Iris (AXIS Q1604/-E), DC-Blende (AXIS Q1602/-E), IR-korrigiert, CS-Anschluss</p> <p>AXIS Q1602/Q1604: Variofokus 2,8 - 8 mm: 100° - 34° Sichtwinkel*, F1.2</p> <p>AXIS Q1602-E/Q1604-E: Variofokus 2,8 - 8 mm: 80° - 34° Sichtwinkel*, F1.2</p> <p>*horizontaler Sichtwinkel</p> <p>Unterstützung für P-Iris-Blende</p>
<b>Tag und Nacht</b>	Automatisch wegschwenkbarer IR-Filter
<b>Minimale Lichtstärke</b>	<p>AXIS Q1602/-E: Farbe: 0.05 Lux, F1.2, Schwarzweiß: 0.008 Lux, F1.2</p> <p>AXIS Q1604/-E: Farbe: 0.1 Lux, F1.2, Schwarzweiß: 0,02 Lux, F1.2</p> <p>Farbe: 0.4 Lux, F1.2, Schwarzweiß: 0.06 Lux, F1,2 mit dynamischer Erfassung</p>
<b>Verschlusszeit</b>	<p>AXIS Q1602/-E: 1/29500 s bis 2 s</p> <p>AXIS Q1604/-E: 1/192 s bis 1/37 s mit Dynamic Capture</p> <p>Bildererfassung und 50 Hz Versorgungsspannungsfrequenz, 1/231 s bis 1/44 s mit dynamischer Bildererfassung und 60 Hz Versorgungsspannungsfrequenz, 1/24500 s bis 2 s</p> <p>Versorgungsspannungsfrequenz, mit 50 Hz, 1/29500 s bis 2 s</p> <p>Versorgungsspannungsfrequenz, mit 60 Hz</p>
Video	
<b>Video-komprimierung</b>	H.264 Haupt- und Basisprofil (MPEG-4 Part 10/AVC) Motion JPEG
<b>Auflösungen</b>	<p>AXIS Q1602/-E: 768 x 576 bis 160 x 90</p> <p>AXIS Q1604/-E: 1280 x 960* (1 MP) bis 160 x 90</p> <p>*1400 x 1050 (1,4 MP) skalierte Auflösung über VAPIX® verfügbar</p>
<b>Bildrate H.264</b>	<p>AXIS Q1602/-E: 30 Bilder pro Sekunde in allen Auflösungen</p> <p>AXIS Q1604/-E: 30 Bilder pro Sekunde bei 60-Hz Erfassungsmodus, 25 Bilder/s bei 50 Hz Erfassungsmodus</p>
<b>Bildrate Motion JPEG</b>	<p>AXIS Q1602/-E: 30 Bilder pro Sekunde in allen Auflösungen</p> <p>AXIS Q1604/-E: 30 Bilder pro Sekunde bei 60-Hz Erfassungsmodus, 25 Bilder/s bei 50 Hz Erfassungsmodus</p>
<b>Video-Streaming</b>	Mehrere einzeln konfigurierbare H.264-/Motion JPEG-Videoströme Bildrate und Bandbreite steuerbar VBR/CBR H.264
<b>Bildeinstellungen</b>	<p>Komprimierung, Farbe, Helligkeit, Schärfe, Kontrast, Weißabgleich, Belichtungssteuerung, Belichtungszonen, Gegenlichtkorrektur, Feineinstellung des Verhaltens bei schwachem Licht, großer Kontrastumfang – dynamischer Kontrast (dynamic contrast)</p> <p>AXIS Q1604/-E: WDR: Bis zu 120 dB (0,4 - 400.000 Lux) je nach Szenario</p> <p>AXIS Q1602/Q1604: Bildrotation: 0°, 90°, 180°, 270°, einschließlich Corridor Format</p> <p>Text- und Bild-Overlay, Privatzenenmaske, Spiegelung von Bildern</p>
Audio	
<b>Audio-Streaming</b>	Zwei-Wege-Radio
<b>Audio-komprimierung</b>	<p>AAC LC 8/16 kHz</p> <p>G.711 PCM 8 kHz</p> <p>G.726 ADPCM 8 kHz</p> <p>Konfigurierbare Bitrate</p>
<b>Audio-Eingang/-Ausgang</b>	<p>Eingang für externes Mikrofon bzw. Line-Eingang, Line-Ausgang</p> <p>AXIS Q1602/Q1604: Integriertes Mikrofon (kann ausgeschaltet werden)</p>
Netzwerk	
<b>Sicherheit</b>	<p>Kennwortschutz, IP-Adressfilterung, HTTPS-Verschlüsselung**, Netzwerkzugangskontrolle gemäß IEEE 802.1X**, Digest-Authentifizierung, Benutzerzugriffsprotokollierung</p>
<b>Unterstützte Protokolle</b>	<p>IPv4/v6, HTTP, HTTPS**, SSL/TLS**, QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP**, SNMPv1/v2c/v3(MIB-II), DNS, DynDNS, NTP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS</p>
Systemintegration	
<b>API (Application Programming Interface)</b>	<p>Offene API für Softwareintegration, einschließlich der ONVIF-Spezifikation, die unter <a href="http://www.onvif.org">www.onvif.org</a> verfügbar ist, sowie VAPIX® und AXIS Camera Application Platform von Axis Communications, Spezifikationen verfügbar unter <a href="http://www.axis.com">www.axis.com</a></p> <p>Unterstützt das AXIS Video Hosting System (AVHS), das den Kameraanschluss mit einem Mausklick ermöglicht</p>
<b>Intelligentes Video</b>	<p>Videobewegungserkennung, aktiver Manipulationsalarm, Audioerkennung</p> <p>Unterstützung für AXIS Camera Application Platform, was die Installation zusätzlicher Anwendungen ermöglicht</p>
<b>Alarmauslösung</b>	Intelligentes Video, externer Eingang, Edge Storage von Ereignissen
<b>Alarmereignisse</b>	Datei-Upload über FTP, HTTP, Netzwerkfreigabe und E-Mail, Benachrichtigung per E-Mail, HTTP und TCP, Aktivierung externer Ausgänge, Aufzeichnung von Video und Audio auf Edge Storage, Vor-/Nachalarm-Video-puffer, Abspielen von Audiclips
<b>Daten-Streaming</b>	Ereignisdaten
<b>Integrierte Installationshilfen</b>	Fokus-Assistent, Pixelzähler, Feineinstellung des Aufnahmemaßes
Allgemein	
<b>Gehäuse</b>	<p>Kamera: Metall (Zink)</p> <p>AXIS Q1602-E/Q1604-E: Gemäß IK10 schlagfestes Aluminiumgehäuse mit integrierter Feuchtigkeit entziehender Membrane und Schutz nach IP66 bzw. NEMA 4X</p> <p>Farbe: Weiß NCS S 1002-B</p>
<b>Speicher</b>	256 MB RAM, 128 MB Flash
<b>Stromversorgung</b>	<p>8-20 V Gleichstrom oder Power over Ethernet (PoE) IEEE 802.3af</p> <p>AXIS Q1602: Max. 6,5 W, PoE Klasse 3</p> <p>AXIS Q1604: Max. 6,9 W, PoE Klasse 3</p> <p>AXIS Q1602-E/Q1604-E: PoE IEEE 802.3af, max. 12.95 W oder High PoE max 25.5 W</p>
<b>Anschlüsse</b>	<p>RJ-45 10BASE-T/100BASE-TX PoE</p> <p>Anschlussblock für 1 Alarmeingang und 1 Ausgang</p> <p>3,5 mm Mikro-/Line-Eingang, 3,5 mm Line-Ausgang</p>
<b>Edge Storage</b>	<p>SD-/SDHC-Speicherkartensteckplatz (Karte nicht im Lieferumfang enthalten)</p> <p>Unterstützt die Aufzeichnung in ein zentrales Netzwerkverzeichnis (Netzwerk-Speicher oder Dateiserver)</p>
<b>Betriebsbedingungen</b>	<p>AXIS Q1602/Q1604: 0 °C bis 50 °C</p> <p>Relative Luftfeuchtigkeit 10% bis 85 % (nicht kondensierend)</p> <p>AXIS Q1602-E/Q1604-E: -30 °C bis 50 °C mit PoE; bis zu -40 °C mit High PoE</p> <p>Arctic Temperature Control ermöglicht ein sicheres Starten der Kamera mit High PoE ab -40° C</p> <p>Relative Luftfeuchtigkeit 10% bis 100 % (kondensierend)</p>
<b>Zulassungen</b>	<p>EN 55022 Klasse B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 55024-1, FCC Teil 15 Abschnitt B Klasse B, ICES-003 Klasse B, VCCI Klasse B, C-Tick AS/NZS CISPR 22, KC, EN 60950-1, IEC 60950-1</p> <p>AXIS Q1602-E/Q1604-E: IEC 60529 IP66, NEMA 250 Typ 4X, IEC 62262, IK10, IEC60950-22, IEC 60068-2-6, IEC 60068-2-27, EN 50121-4/IEC 62236</p>
<b>Gewicht</b>	<p>AXIS Q1602/Q1604: 0,6 kg</p> <p>AXIS Q1602-E/Q1604-E: 3,1 kg</p>
<b>Im Lieferumfang enthaltenes Zubehör</b>	<p>Standfuß, Montage- und Anschlusszubehör, Installationshandbuch, CD mit Installationsprogrammen und Management-Software, Aufzeichnungssoftware und Benutzerhandbuch, Windows Decoder-Lizenz für 1 Benutzer</p> <p>AXIS Q1602-E/Q1604-E: Halterung für Wandmontage, Sonnenschutz</p>

\*\*Dieses Produkt enthält Software, die vom OpenSSL Project zur Verwendung im OpenSSL Toolkit entwickelt wurde. ([www.openssl.org](http://www.openssl.org))

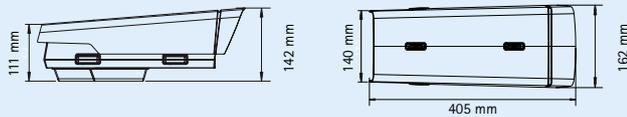
Weitere Informationen finden Sie unter [www.axis.com](http://www.axis.com)

**Abmessungen: AXIS Q16 Netzwerk-Kameras**

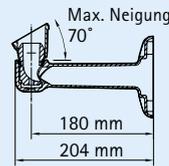
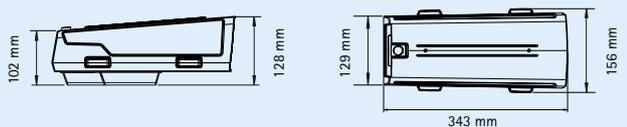


**Abmessungen: AXIS Q16-E Netzwerk-Kameras, einschließlich Wandhalterung mit innen liegendem Kabelkanal**

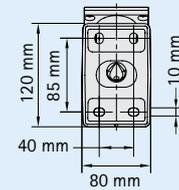
Mit Sonnenschutz



Ohne Sonnenschutz



Wandhalterungsarm



Rückseite des Wandhalterungsträgers

**Optionales Zubehör**

AXIS T8120 Midspan 15 W  
1 Anschluss



AXIS T8122 DC 30 W  
Midspan



AXIS T8123 High PoE  
30 W Midspan  
1 Anschluss



AXIS T90A Strahler



Objektive



AXIS T8414  
Installationsmonitor



Informationen zu AXIS Camera Station und Videoverwaltungssoftware von Axis Application Development Partners finden Sie unter [www.axis.com/products/video/software/](http://www.axis.com/products/video/software/)

**Sonderzubehör für Kameramodelle zur Außenbereichsüberwachung**

Wandhalterung – Zubehör

Adapterplatte



Masten-Halterung



Eckhalterung



Deckenhalterungen mit Kugelgelenk



Turmhalterung mit Kugelgelenk



## AXIS Q6034 PTZ Dome Network Camera

HDTV surveillance with high-speed, 18x-zoom dome for indoor use.



- > HDTV 720p, day/night and H.264
- > 18x zoom and fast pan/tilt
- > IP52-rated protection against dust and dripping water
- > Active Gatekeeper
- > Power over Ethernet Plus (IEEE 802.3at)

AXIS Q6034 PTZ Dome Camera offers HDTV video, 18x optical zoom and high-speed pan/tilt performance for exceptional coverage of large areas and great detail when zooming in. Designed for easy and reliable indoor installation, it is ideal for use in airports, train stations, casinos, stadiums and shopping malls.

AXIS Q6034 provides HDTV 720p in compliance with SMPTE 296M standard of 1280x720 pixel resolution, full frame rate, HDTV color fidelity and a 16:9 format. The day/night functionality ensures high image quality even in low light conditions. AXIS Q6034 supports multiple H.264 and Motion JPEG video streams. H.264 greatly optimizes bandwidth and storage use without compromising image quality.

AXIS Q6034 provides 18x optical and 12x digital zoom with autofocus. The 18x zoom in combination with the HDTV resolution provides zoomed-in views that offer not only the same level of detail as a 36x-zoom, 4CIF camera, but also the extra advantage of a wider (16:9) field of view.

The IP52-rated camera offers protection against dust and dripping water. Support for Power over Ethernet Plus (PoE+) simplifies installation since only one cable is required for power, video and PTZ controls. A PoE+ midspan is supplied with the camera.

With Active Gatekeeper, the camera can automatically move to a preset position when motion is detected in a pre-defined area and then track the detected object.

When an optional multi-connector cable is used, AXIS Q6034 supports two-way audio, I/O ports for external devices and AC/DC power. The camera's memory card slot enables recordings to be stored locally.



## Technical specifications – AXIS Q6034 PTZ Dome Network Camera

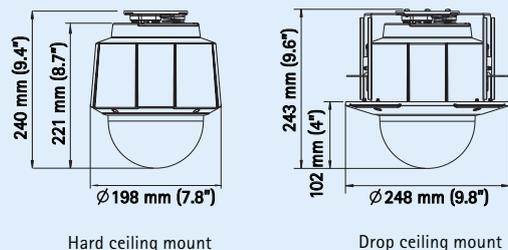
Camera	
<b>Models</b>	AXIS Q6034 60 Hz, AXIS Q6034 50 Hz
<b>Image sensor</b>	1/3" progressive scan CCD 1.3 megapixel
<b>Lens</b>	f 4.7 – 84.6 mm, F1.6 – 2.8, autofocus, automatic day/night, horizontal angle of view: 55.2° – 3.2°
<b>Minimum illumination</b>	Color: 0.74 lux at 30 IRE F1.6 B/W: 0.04 lux at 30 IRE F1.6
<b>Shutter time</b>	1/10 000 s to 1/4 s
<b>Pan/tilt/zoom</b>	E-flip, 100 preset positions Pan: 360° endless, 0.05 – 450°/s, Tilt: 180°, 0.05 – 450°/s 18x optical zoom and 12x digital zoom, total 216x zoom
<b>Pan/tilt/zoom functionalities</b>	Tour recording, guard tour, control queue On-screen directional indicator
Video	
<b>Video compression</b>	H.264 (MPEG-4 Part 10/AVC) Motion JPEG
<b>Resolutions</b>	HDTV 720p 1280x720 to 320x180
<b>Frame rate</b>	H.264: Up to 30/25 fps (60/50 Hz) in all resolutions Motion JPEG: Up to 30/25 fps (60/50 Hz) in all resolutions
<b>Video streaming</b>	Multiple, individually configurable streams in H.264 and Motion JPEG Controllable frame rate and bandwidth VBR/CBR H.264
<b>Image settings</b>	Wide dynamic range (WDR), manual shutter time, compression, color, brightness, sharpness, white balance, exposure control, exposure zones, backlight compensation, fine tuning of behavior at low light, rotation, text and image overlay, 32 individual 3D privacy masks, image freeze on PTZ
Audio	
<b>Audio streaming</b>	Two-way
<b>Audio compression</b>	AAC-LC 8/16 kHz, G.711 PCM 8 kHz, G.726 ADPCM 8 kHz Configurable bit rate
<b>Input/output</b>	Requires multi-connector cable (sold separately) for external microphone or line input, and line output
Network	
<b>Security</b>	Password protection, IP address filtering, HTTPS encryption*, IEEE 802.1X network access control*, digest authentication, user access log
<b>Supported protocols</b>	IPv4/v6, HTTP, HTTPS*, SSL/TLS*, QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP™, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTPC, ICMP, DHCP, ARP, SOCKS

\* This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([www.openssl.org](http://www.openssl.org))

System integration	
<b>Application Programming Interface</b>	Open API for software integration, including VAPIX® and AXIS Camera Application Platform from Axis Communications; specifications available at <a href="http://www.axis.com">www.axis.com</a> ONVIF, specification available at <a href="http://www.onvif.org">www.onvif.org</a> AXIS Video Hosting System (AVHS) with One-Click Camera Connection
<b>Intelligent video</b>	Video motion detection, audio detection, autotracking, Active Gatekeeper, AXIS Camera Application Platform for installation of additional applications
<b>Event triggers</b>	Video motion detection, audio detection, autotracking, external input, PTZ preset, temperature, memory card full
<b>Event actions</b>	File upload: FTP, HTTP, network share and email Notification: email, HTTP and TCP External output, PTZ preset, guard tour, play audio clip, video and audio recording to edge storage, autotracking, day/night mode Pre- and post-alarm video buffering
<b>Data streaming</b>	Event data
<b>Installation aid</b>	Pixel counter
General	
<b>Casing</b>	IP52-rated, metal casing (aluminum), acrylic (PMMA) clear dome
<b>Memory</b>	256 MB RAM, 128 MB Flash
<b>Power</b>	Power over Ethernet Plus (PoE+) IEEE 802.3at, max. 30 W AXIS T8123 High PoE Midspan 1-port included: 100–240 V AC max. 37 W 20–24 V AC, max. 27 VA; 24–34 V DC, max. 19 W
<b>Connectors</b>	RJ-45 for 10BASE-T/100BASE-TX PoE Multi-connector (cable sold separately) for AC/DC power, 4 configurable alarm inputs/outputs, mic in, line mono input, line mono output to active speaker
<b>Edge storage</b>	SD/SDHC/SDXC slot supporting memory card up to 64 GB (card not included); support for recording to network share (network-attached storage or file server)
<b>Operating conditions</b>	0 °C to 50 °C (32 °F to 122 °F) Humidity 15 – 85% RH (non-condensing)
<b>Approvals</b>	EN 55022 Class B, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 55024, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22, KCC Class B IEC 60529 IP52, IEC 60721-4-3 Class 3K3, 3M3, EN/IEC 60068-2 Midspan: EN 60950-1, GS, UL, cUL, CE, VCCI, CB, KCC, CSA, UL-AR
<b>Weight</b>	Camera: 2.6 kg (5.7 lb.) Camera with drop-ceiling mount: 3.2 kg (7.1 lb.)
<b>Included accessories</b>	AXIS T8123 High PoE Midspan 1-port, mounting kit for hard and drop ceilings, smoked dome cover, Installation Guide, Installation and Management Software CD, Windows decoder 1-user license

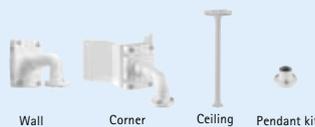
More information is available at [www.axis.com](http://www.axis.com)

### Dimensions



### Optional accessories

#### AXIS T91A Mounting Accessories



#### AXIS T90A Illuminators



#### AXIS T8310 Video Surveillance Control Board



Multi-connector cable for AC/DC power, I/Os and audio



AXIS Camera Companion (included), AXIS Camera Station and video management software from Axis' Application Development Partners (not included). See [www.axis.com/products/video/software/](http://www.axis.com/products/video/software/)

## AXIS Q60-E PTZ Dome Network Cameras

Outdoor, high-speed PTZ domes: AXIS Q6042-E/Q6044-E/Q6045-E



- > Up to HDTV 1080p
- > Up to 36x optical zoom
- > Outdoor-ready and Arctic Temperature Control
- > Vandal-resistant and shock detection
- > Automatic defog (AXIS Q6044-E)
- > High PoE

AXIS Q60-E cameras are top-of-the-line, outdoor-ready pan/tilt/zoom (PTZ) domes that provide exceptional coverage of wide areas and great detail when zooming in. Designed for easy installation and reliable operation outdoors, they are ideal for city surveillance and airports, train stations, harbors and stadiums.

AXIS Q6045-E offers a rich viewing experience with HDTV 1080p and 20x optical zoom. AXIS Q6044-E provides HDTV 720p and 30x optical zoom. AXIS Q6042-E supports full frame rate Extended D1 resolution and 36x optical zoom.

AXIS Q60-E cameras are vandal-resistant (IK10) and have shock detection, surge protection (railway standards), and protection against dust, rain and snow (IP66 and NEMA 4X). They can operate in temperatures ranging from -40 °C to 50 °C (-40 °F to 122 °F). The cameras' Arctic Temperature Control ensures safe start-up in extreme cold. AXIS Q6042-E and AXIS Q6044-E support electronic image stabilization—useful for get-

ting smoother video in windy conditions. In fog, AXIS Q6044-E can provide clearer video with its automatic defog functionality.

The PTZ domes support autotracking and Active Gatekeeper, and have substantial capacity for third-party intelligent video applications. AXIS Q6045-E offers additional built-in analytics such as highlight compensation, object removed and enter/exit detection.

AXIS Q60-E cameras have a built-in memory card slot for local storage of recordings. The cameras are powered by High Power over Ethernet using the supplied High PoE midspan.



*Note: Mounting brackets are sold separately.*



## High-performance outdoor-ready PTZ domes

The robust AXIS Q60-E PTZ domes are designed for round-the-clock pan/tilt/zoom operation in outdoor environments. The cameras can be automatically directed to 256 preset positions using guard tour. With endless 360° pan, they enable surveillance of an extremely wide area. High zoom, in combination with high resolution, enables detailed surveillance at great distances. AXIS Q60-E cameras have fast and precise pan/tilt performance. They can also tilt 20° above the horizon, which makes it possible for the cameras to see higher than their mounting position. This can be useful, for example, at a stadium where there is a need to look up at the stands.



The images above show the field of view and level of detail provided by the three AXIS Q60-E PTZ domes.



Snapshots of HDTV 1080p views from AXIS Q6045-E: at left, wide view; at right, 20x zoomed-in view where the license plate of a car 275 m (900 ft.) away can be read.

### Great detail with HDTV

Among the three cameras, AXIS Q6045-E provides the widest field of view—with a 62.98° horizontal angle of view. In addition, AXIS Q6045-E offers the highest level of detail as it delivers HDTV 1080p performance in compliance with the SMPTE 274M standard regarding a 1920x1080 pixel resolution, full frame rate at 25/30 frames per second, HDTV color fidelity and a 16:9 format.

HDTV 1080p provides more than double the number of pixels as HDTV 720p (1280x740p). While AXIS Q6045-E has 20x optical zoom, the combination of the zoom factor and HDTV 1080p allows the license plate of a vehicle to be read some 275 m (900 ft) away—at a further distance than with AXIS Q6044-E, which has 30x optical zoom, and AXIS Q6042-E, which has 36x optical zoom.

AXIS Q6044-E also offers a wide horizontal viewing angle at 62.9°. The camera's 30x optical zoom, in combination with HDTV 720p, provides superb zoomed-in views, enabling, for instance, the license plate of a vehicle to be read up to 245 m (800 ft) away. AXIS Q6042-E offers Extended D1 resolution (736x576 in 50 Hz, 752x480 in 60 Hz) and can enable a vehicle's license plate to be read some 190 m (620 ft) away.

All three PTZ domes support H.264 Main Profile for efficient compression of video that maintains image quality while at the same time minimizing bandwidth use and storage space. The cameras offer day/night functionality, enabling excellent color video during day time, and clear black and white video in low light.

## Electronic image stabilization in AXIS Q6042-E and AXIS Q6044-E

Cameras with high zoom are sensitive to vibrations from wind and traffic. AXIS Q6042-E and AXIS Q6044-E support electronic image stabilization (EIS), which reduces the effects of camera vibration. In windy conditions, EIS provides clearer, more useful video and helps reduce the size of video files, which leads to lower bandwidth and storage use.



Under vibrating conditions: at left, image without EIS; at right, a snapshot from a vibrating AXIS Q6044-E with EIS activated.

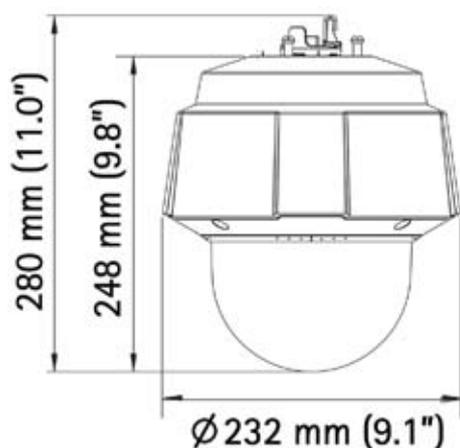
## Automatic defog with AXIS Q6044-E

AXIS Q6044-E supports automatic defog, which when activated, automatically detects fog in the scene and digitally filters it out of view to provide clearer video.



Images from AXIS Q6044-E: at left, without automatic defog; at right, with automatic defog activated.

### Dimensions



### Optional accessories

1. AXIS T91A
2. Smoked Dome D
3. Axis High PoE midspans
4. AXIS T8129 PoE Extender
5. AXIS P8221
6. AXIS T8310
7. RJ45 IP66-rated cables with premounted connector (CAT6)



## Technical Specifications - AXIS Q60-E PTZ Dome Network Cameras

<b>Models</b>	AXIS Q6042-E 50 Hz, AXIS Q6042-E 60 Hz AXIS Q6044-E 50 Hz, AXIS Q6044-E 60 Hz AXIS Q6045-E 50 Hz, AXIS Q6045-E 60 Hz
<b>Camera</b>	
<b>Image sensor</b>	AXIS Q6042-E: 1/4" ExView HAD progressive scan CCD AXIS Q6044-E: 1/3" progressive scan CCD AXIS Q6045-E: 1/3" progressive scan CMOS
<b>Lens</b>	AXIS Q6042-E: f=3.3–119 mm, F1.4–4.2, autofocus Horizontal angle of view: 57.2° – 1.7° AXIS Q6044-E: f=4.4–132 mm, F1.4–4.6, autofocus Horizontal angle of view: 62.9° – 2.2° AXIS Q6045-E: f=4.45–89 mm, F1.6–2.9, autofocus Horizontal angle of view: 62.98°–3.49°
<b>Day and night</b>	Automatically removable infrared-cut filter
<b>Minimum illumination</b>	AXIS Q6042-E: Color: 0.5 lux at 30 IRE F1.4; B/W: 0.008 lux at 30 IRE F1.4 AXIS Q6044-E: Color: 0.2 lux at 30 IRE F1.4; B/W: 0.04 lux at 30 IRE F1.4 AXIS Q6045-E: Color: 0.6 lux at 30 IRE F1.6; B/W: 0.04 lux at 30 IRE F1.6
<b>Shutter time</b>	AXIS Q6042-E: 1/30000 s to 1.5 s (50 Hz), 1/30000 s to 0.5 s (60 Hz) AXIS Q6044-E: 1/10000 s to 1/4 s AXIS Q6045-E: 1/33000 s to 1/3 s (50 Hz), 1/33000 s to 1/4 s (60 Hz)
<b>Pan/Tilt/Zoom</b>	E-flip, 256 preset positions, Tour recording, Guard tour, Control queue, On-screen directional indicator Pan: 360° endless, 0.05°–450°/s; Tilt: 220°, 0.05°–450°/s AXIS Q6042-E: 36x optical zoom and 12x digital zoom, total 432x zoom AXIS Q6044-E: 30x optical zoom and 12x digital zoom, total 360x zoom AXIS Q6045-E: 20x optical zoom and 12x digital zoom, total 240x zoom
<b>Video</b>	
<b>Video compression</b>	H.264 Main and Baseline Profiles (MPEG-4 Part 10/AVC) Motion JPEG
<b>Resolutions</b>	AXIS Q6042-E: Extended D1 736x576 to 176x144 (50 Hz), Extended D1 752x480 to 176x120 (60 Hz) AXIS Q6044-E: 1280x720 (HDTV 720p) to 320x180 AXIS Q6045-E: 1920x1080 (HDTV 1080p) to 320x180
<b>Frame rate</b>	H.264: Up to 25/30 fps (50/60 Hz) in all resolutions Motion JPEG: Up to 25/30 fps (50/60 Hz) in all resolutions
<b>Video streaming</b>	Multiple, individually configurable streams in H.264 and Motion JPEG Controllable frame rate and bandwidth VBR/CBR H.264
<b>Image settings</b>	Wide dynamic range (WDR), Manual shutter time, Compression, Color, Brightness, Sharpness, White balance, Exposure control, Exposure zones, Backlight compensation, Fine tuning of behavior at low light, Rotation, Text and image overlay, 32 individual 3D privacy masks, Image freeze on PTZ AXIS Q6042-E: Electronic image stabilization AXIS Q6044-E: Electronic image stabilization, Automatic defog AXIS Q6045-E: Highlight compensation
<b>Network</b>	
<b>Security</b>	Password protection, IP address filtering, HTTPS <sup>a</sup> encryption, IEEE 802.1X <sup>a</sup> network access control, Digest authentication, User access log
<b>Supported protocols</b>	IPv4/v6, HTTP, HTTPS <sup>a</sup> , SSL/TLS <sup>a</sup> , QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP <sup>TM</sup> , SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS
<b>System integration</b>	
<b>Application Programming Interface</b>	Open API for software integration, including VAPIX <sup>®</sup> and AXIS Camera Application Platform; specifications at <a href="http://www.axis.com">www.axis.com</a> AXIS Video Hosting System (AVHS) with One-Click Camera Connection. ONVIF Profile S, specification at <a href="http://www.onvif.org">www.onvif.org</a>
<b>Intelligent video</b>	Video motion detection, Autotracking, Active Gatekeeper, AXIS Camera Application Platform enabling installation of additional applications AXIS Q6044-E: Automatic defog AXIS Q6045-E: Basic analytics (not to be compared with third-party analytics): Object removed, Enter/exit detector, Fence detector, Object counter, Highlight compensation
<b>Event triggers</b>	Video motion detection, Shock detection, Fan, Heater, Temperature, Manual trigger, Autotracking, Moving, PTZ preset, Edge storage events, AXIS Camera Application Platform AXIS Q6045-E: Enter/exit, Fence detector, Object removed
<b>Event actions</b>	File upload: FTP, HTTP, network share and email Notification: email, HTTP and TCP PTZ preset, Guard tour, Autotracking, Day/night mode, Video recording to edge storage, Pre- and post-alarm video buffering
<b>Built-in installation aids</b>	Pixel counter
<b>General</b>	
<b>Casing</b>	IP66-, NEMA 4X- and IK10-rated metal casing (aluminum), polycarbonate (PC) clear dome, sunshield (PC/ASA)
<b>Memory</b>	512 MB RAM, 128 MB Flash
<b>Power</b>	High Power over Ethernet (High PoE), max. 60 W AXIS T8124 High PoE 60 W Midspan 1-port: 100–240 V AC, max. 74 W
<b>Connectors</b>	RJ45 for 10BASE-T/100BASE-TX PoE RJ45 Push-pull Connector (IP66) included
<b>Edge storage</b>	SD/SDHC/SDXC slot supporting memory card up to 64 GB (card not included); support for recording to network share (network-attached storage or file server)
<b>Operating conditions</b>	-40 °C to 50 °C (-40 °F to 122 °F) Arctic Temperature Control enables camera start-up at temperatures as low as -40 °C (-40 °F) Humidity 10–100% RH (condensing)
<b>Approvals</b>	EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 55024, EN 50121-4, IEC 62236-4, FCC Part 15 Subpart B Class A, ICES-003 Class A, VCCI Class A, C-tick AS/NZS CISPR 22 Class A, KCC KN22 Class A, KN24, IEC/EN/UL 60950-1, IEC/EN/UL 60950-22, IEC/EN 60529 IP66, NEMA 250 Type 4X, IEC 62262 IK10, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-78, IEC 60068-2-14, IEC 60068-2-30, IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-60, ISO 4892-2 Midspan: EN 60950-1, GS, UL, cUL, CE, FCC, VCCI, CB, KCC, UL-AR
<b>Weight</b>	3.7 kg (8.2 lb.)
<b>Included accessories</b>	AXIS T8124 High PoE 60 W Midspan 1-port, RJ45 Push-pull Connector (IP66), Sunshield, Installation Guide, Installation and Management Software CD, Windows decoder 1-user license
<b>Video management software</b>	AXIS Camera Companion (included), AXIS Camera Station and video management software from Axis' Application Development Partners (not included). For more information, see <a href="http://www.axis.com/products/video/software">www.axis.com/products/video/software</a>
<b>Warranty</b>	Axis 3-year warranty and AXIS Extended Warranty option, see <a href="http://www.axis.com/warranty">www.axis.com/warranty</a>

a. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([www.openssl.org](http://www.openssl.org)), and cryptographic software written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)).

More information is available at [www.axis.com](http://www.axis.com)

# G-Cam/GNSD1880

Extremely high resolution FullHD dome



## Product information

The G-Cam/1880 is a compact high speed FullHD dome camera system designed to deliver superb performance and durability with an unobtrusive weatherproof housing that looks good in any security and surveillance installation. It is especially designed for in- and outdoor conditions and can easily be adapted with optional accessories to fit well under various mounting situations. This extremely compact and lightweight dome camera delivers a superb image quality, containing a new generation of an advanced DSP color camera with 20x optical and 10x digital zoom.

- | 20x motor-zoom lens (4.7 - 94.0 mm)
- | Wide dynamic range
- | Text insertion depending on position
- | 16 privacy zones [in independent viewing areas] (Privacy masking)
- | Dome already integrated in weatherproof housing
- | High pan/tilt speed with presets (up to 400°/s with 0,225° preset accuracy)
- | Supports 25 pictures/s in QCIF, CIF, 2CIF and 4CIF at all quality levels of compression
- | Usage of existing network structures
- | Vandalism-proof hood out of polycarbonate

# Technical data

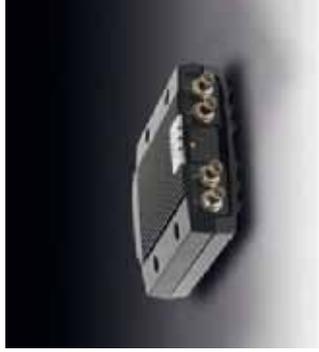
Image sensor (Chip) / Scanning system	1/2,8" Sony Progressive Scan CMOS
Minimum sensitivity	0.05 Lux color; 0.01 Lux BW
White balance	Automatic / Manual / Indoor / Outdoor / ATW
Shutter	1/1 - 1/10,000 s
Back-light compensation	On / Off
Automatic gain control (AGC) / WDR	AGC: Automatic or Manual / WDR: yes
Colour / B/W switching	Automatic/Manual (IR-cut filter)
Privacy masking	16 adjustable masking zones via on screen menu
Lens	4.7 mm to 94.0 mm (optical)
Zoom ratio (optical) / (digital)	20x / 1x - 10x proportional
Proportional zoom	On / Off
Panning range	360° endless
Tilting range	-10° to 190°
Panning/Tilting speed	0.5°/s to 90°/s (manual)
Preset speed	5°/s to 400°/s (pan/tilt)
Preset accuracy	0.225°
Auto flip / Digital flip	Yes; Image, mechanical, off
Auto focus	Automatic / Manual
Preset positions	256 positions
Sequence	Yes; 8 x
Cruise	Yes; 8 x
Auto Pan	Yes; 4 x
Network interface	10 / 100 Mb Ethernet (RJ-45), 10/100Base-TX
Communication protocol	IPv4/v6, TCP/IP, UDP, RTP, RTSP, HTTP, HTTPS, ICMP, FTP, SMTP, DHCP, PPPoE, UPnP, IGMP, SNMP, IEEE 802.1x, QoS, ONVIF
Picture compression	H.264 / MJPEG
Picture resolution in pixel	1080p / SXGA / 720p / XGA / SVGA / D1 / VGA / CIF
Picture ratio in fps	1080p (30 fps) + D1 (30 fps)
Access control	User Account + Password Protection
Motion Detection	On / Off
Alarm In/Outputs	4 / 2
Alarm reactions / Home function	Preset, Sequence, Auto Pan, Cruise
Supported Web Browser	Internet Explorer 6.0+/Chrome/Firefox/Safari
Audio transmission	Bi-directional, G.711/G.726 ADPCM/AAC (only line-in support)
Operating temperature	- 45 °C bis + 50 °C
Protective rating	IP 66
Voltage supply	24 V AC +- 10% / PoE+ (w/o heater)
Power consumption	Approx. 50 W (w/heater), only with AC 24 V!
Dimensions in mm (Diameter x H)	191.97 x 282.11 (w/sunshield)
Weight	Approx. 2.3 Kg (5.11 lb)
Certificates	CE, FCC, RoHS
<b>Order No.</b>	<b>5.04786</b>
<b>Accessories:</b>	
G-Cam/BWM-004	5.04869
G-Cam/CMA-004	5.04870
GSD/PMA-003	5.18374
GSD/BPE-001	5.04862
PSU-24VAC/80VA/Boxed	5.14040

# DEFSECUR

Defense & Security

Verteidigung & Sicherheit

Ein Unternehmen der A.R.G.U.S. Security Group \* Sicherheit ist Vertrauenssache - Vertrauen ist A.R.G.U.S. Security



Product comparison tables

Network video

Winter 2014

## Axis fixed network cameras

		AXIS M10 Series				
	AXIS M1004-W	AXIS M1013	AXIS M1014	AXIS M1033-W	AXIS M1034-W	AXIS M1054
<b>Image sensor</b>	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS
<b>Lens</b>	2.8mm/F2.0 fixed iris, adjustable focus	2.8mm/F2.0 fixed iris, adjustable focus	2.8mm/F2.0 fixed iris, adjustable focus	2.8mm/F2.0 fixed iris, adjustable focus	2.8mm/F2.0 fixed iris, adjustable focus	2.9 mm/F2.0 fixed iris
<b>Horizontal angle of view</b>	80°	67°	80°	67°	80°	84°
<b>Day and night</b>						
<b>Min illumination/light sensitivity (lux)</b>	1.2 - 10,000	1.2 - 10,000	1.2 - 10,000	1.2 - 10,000	1.2 - 10,000	1.2 - 10,000
<b>Video compression</b>	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG
<b>Max video resolution (pixels)</b>	1280x800 (1MP)	800x600	1280x800 (1MP)	800x600	1280x800 (1MP)	1280 x 800 (1 MP)
<b>Frames per second</b>	30 (1280x800) 30 (HDTV 720p)	30 (800x600)	30 (1280x800) 30 (HDTV 720p)	30 (800x600)	30 (1280x800) 30 (HDTV 720p)	30 (1280x800) 30 (HDTV 720p)
<b>Audio support</b>				Two-way	Two-way	Two-way
<b>Alarm in-/outputs</b>	1/1			Built-in mic and speaker	Built-in mic and speaker	Built-in mic and speaker
<b>Intelligent video</b>	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm	Motion detection Tampering alarm	Motion detection Audio detection Tampering alarm	Motion detection Audio detection Tampering alarm	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform
<b>Security</b>	Multi-level passwords IEEE 802.1x IP filtering HTTPS encryption	Multi-level passwords IEEE 802.1x IP filtering HTTPS encryption	Multi-level passwords IEEE 802.1x IP filtering HTTPS encryption	Multi-level passwords IEEE 802.1x IP filtering HTTPS encryption	Multi-level passwords IEEE 802.1x IP filtering HTTPS encryption	Multi-level passwords IEEE 802.1x IP filtering HTTPS encryption
<b>Network</b>	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
<b>Power</b>	DC PoE splitter available	DC PoE splitter available	DC PoE splitter available	DC PoE splitter available	DC PoE splitter available	DC PoE IEEE 802.3af Class 2
<b>Serial connectors</b>						
<b>Outdoor use</b>						
<b>Other</b>	Digital PTZ, IEEE 802.11b/g/n, AVHS <sup>(1)</sup> , ONVIF, Corridor Format, Wi-Fi Protected Setup	Memory Card Slot, AVHS <sup>(1)</sup> , ONVIF, digital PTZ, Corridor Format	Memory Card Slot, AVHS <sup>(1)</sup> , ONVIF, digital PTZ, Corridor Format	Built-in PIR sensor, illumination LED, digital PTZ, IEEE 802.11b/g/n, AVHS <sup>(1)</sup> , ONVIF, Corridor Format, Wi-Fi Protected Setup	Built-in PIR sensor, illumination LED, digital PTZ, IEEE 802.11b/g/n, AVHS <sup>(1)</sup> , ONVIF, Corridor Format, Wi-Fi Protected Setup	Built-in PIR sensor, illumination LED, digital PTZ, AVHS <sup>(1)</sup> , ONVIF, Corridor Format
<b>Axis Part #</b>	0554-004	0519-004	0520-004	0521-004	0522-004	0338-004

(1) AVHS - AXIS Video Hosting System with One-Click Camera Connection.

## Axis fixed network cameras

		AXIS M11 Series						
		AXIS M1103	AXIS M1104	AXIS M1113 <sup>(a)</sup> AXIS M1113-E <sup>(b)</sup>	AXIS M1114 <sup>(a)</sup> AXIS M1114-E <sup>(b)</sup>	AXIS M1143-L	AXIS M1144-L	AXIS M2014-E
Image sensor		1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS
Lens		Fixed iris, CS mount 2.8 mm/F2.0 6 mm/F1.8	Fixed iris, CS mount 2.8 mm/F2.0 6 mm/F1.8	Varifocal 2.9 - 8.2 mm/F1.4 DC-iris, CS mount	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount	Varifocal 2.5-6 mm/F1.4, DC-iris	Varifocal 2.5-6 mm/F1.4, DC-iris	2.8 mm/F2.0 fixed iris
Horizontal angle of view		2.8 mm: 66° 6 mm: 31°	2.8 mm: 80° 6 mm: 37°	65° - 25°	77° - 29°	72° - 34°	87° - 40°	81°
Day and night						Automatic	Automatic	
Min illumination/ light sensitivity (lux)		2.8 mm: 1.0 - 100,000 6 mm: 0.9 - 100,000	2.8 mm: 1.0 - 100,000 6 mm: 0.9 - 100,000	0.6	0.6	0.6 (color) 0.08 (B/W) 0 (with IR illumination)	0.6 (color) 0.08 (B/W) 0 (with IR illumination)	1.0 - 10,000
Video compression		H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG
Max video resolution (pixels)		800 x 600	1280 x 800 (1 MP) <sup>(a)</sup> 30 (1280x800) 30 (HDTV 720p)	800 x 600	1280 x 800 (1 MP) <sup>(a)</sup> 30 (1280x800) 30 (HDTV 720p)	800 x 600	1280 x 800 (1 MP)	1280x720
Frames per second		30 (800x600)	30 (800x600)	30 (800x600)	30 (1280x800) 30 (HDTV 720p)	30 (600x600)	30 (1280x800) 30 (HDTV 720p)	30 (HDTV 720p)
Audio support								
Alarm in-/outputs						1/1	1/1	1/1
Intelligent video		Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm	Motion detection Tampering alarm	Motion detection Tampering alarm AXIS Camera Application Platform
Security		Multi-level passwords IP filtering HTTPS encryption	Multi-level passwords IP filtering HTTPS encryption	Multi-level passwords IP filtering HTTPS encryption	Multi-level passwords IP filtering HTTPS encryption	Multi-level passwords IP filtering HTTPS encryption	Multi-level passwords IP filtering HTTPS encryption	Multi-level passwords IP filtering HTTPS encryption
Network		IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
Power		PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2
Serial connectors								
Outdoor use		Requires housing	Requires housing	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>			Outdoor ready
Other		Digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™	Digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™	Digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™ <sup>(a)</sup>	Digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™ <sup>(a)</sup>	Digital PTZ, memory card slot, Built-in IR illumination, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™	Digital PTZ, memory card slot, Built-in IR illumination, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™	IP66 rating, memory card slot, AVHS <sup>(1)</sup> , ONVIF, Corridor Format™
Axis Part #		2.8mm: 0329-001 6mm: 0366-001	2.8mm: 0339-001 6mm: 0367-001	0340-001 <sup>(a)</sup> 0431-001 <sup>(a)</sup>	0341-001 <sup>(a)</sup> 0432-001 <sup>(a)</sup>	0435-001	0436-001	0549-001

Notations (a) and (b) refer to the corresponding product models for the column; (1) AVHS - AXIS Video Hosting System with One-Click Camera Connection; (2) 1440 x 900 (1.3 MP) scaled resolution available via VAPIX®

Axis fixed network cameras

	AXIS P13 Series			AXIS Q16 Series			AXIS Q17 Series										
	AXIS P1353 <sup>(a)</sup> AXIS P1353-E <sup>(b)</sup>		AXIS P1354 <sup>(a)</sup> AXIS P1354-E <sup>(b)</sup>		AXIS P1355 <sup>(a)</sup> AXIS P1355-E <sup>(b)</sup>		AXIS P1357 <sup>(a)</sup> AXIS P1357-E <sup>(b)</sup>		AXIS Q1602 <sup>(a)</sup> AXIS Q1602-E <sup>(b)</sup>		AXIS Q1604 <sup>(a)</sup> AXIS Q1604-E <sup>(b)</sup>		AXIS Q1755 <sup>(a)</sup> AXIS Q1755-E <sup>(b)</sup>		AXIS Q1765-LE		
Image sensor	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/2.8" progressive scan RGB CMOS	1/3" progressive scan RGB CMOS	1/3.2" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/2.9" progressive scan RGB CMOS			
Lens	Varifocal 3 - 8 mm/F1.0 DC-iris, IR-corrected, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, IR-corrected, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.6 P-Iris(I), CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.6 P-Iris(I), CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.6 P-Iris(I), CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	Varifocal 2.8 - 8 mm/F1.2 DC-iris, CS mount Remote back focus	5.1 - 51 mm/F1.8-2.1 auto iris and autofocus 10x optical zoom 12x digital zoom	4.7-84.6 mm/F1.6-2.8 Autofocus 18x optical zoom 12x digital zoom			
Horizontal angle of view	82° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	109° - 39° <sup>(a)</sup> 80° - 39° <sup>(b)</sup>	92° - 32° <sup>(a)</sup> 80° - 32° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	100° - 34° <sup>(a)</sup> 80° - 34° <sup>(b)</sup>	48.1° - 5.1°	59° to 4°			
Day and night	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	
Min illumination/light sensitivity (lux)	0.1 (color) 0.02 (B/W)	0.1 (color) 0.02 (B/W)	0.2 (color) 0.04 (B/W)	0.1 (color) 0.02 (B/W)	0.1 (color) 0.02 (B/W)	0.1 (color) 0.02 (B/W)	0.1 (color) 0.02 (B/W)	2 (color) 0.2 (B/W)	0.5 lux (color) 0.04 (B/W) 0 (with IR illumination)								
Video compression	H.264 Motion JPEG 800 x 600	H.264 Motion JPEG 1280x960 (1.3MP) <sup>(a)</sup>	H.264 Motion JPEG 1920 x 1080 (HDTV 1080p)	H.264 Motion JPEG 2592 x 1944 (5 MP)	H.264 Motion JPEG 2592 x 1944 (5 MP)	H.264 Motion JPEG 2592 x 1944 (5 MP)	H.264 Motion JPEG 2592 x 1944 (5 MP)	H.264 Motion JPEG 2592 x 1944 (5 MP)	H.264 Motion JPEG 1280 x 960 (1 MP) <sup>(a)</sup>	H.264 Motion JPEG 1280 x 960 (1 MP) <sup>(a)</sup>	H.264 Motion JPEG 1280 x 960 (1 MP) <sup>(a)</sup>	H.264 Motion JPEG 1280 x 960 (1 MP) <sup>(a)</sup>	H.264 Motion JPEG 1920x1080 (2 MP)	H.264 Motion JPEG 1920x1080 (HDTV 1080p)			
Max video resolution (pixels)	800 x 600	1280x960 (1.3MP) <sup>(a)</sup>	1920 x 1080 (HDTV 1080p)	2592 x 1944 (5 MP)	1280 x 960 (1 MP) <sup>(a)</sup>	1280 x 960 (1 MP) <sup>(a)</sup>	1280 x 960 (1 MP) <sup>(a)</sup>	1280 x 960 (1 MP) <sup>(a)</sup>	1920x1080 (HDTV 1080p)	1920x1080 (HDTV 1080p)							
Frames per second	30 (800x600)	30 (1280x960) 30 (HDTV 720p)	30 (HDTV 1080p) 30 (HDTV 720p)	12 (5MP, 2592x1944) 20 (3MP, 2048x1536) 30 (HDTV 1080p)	30 (1280x960) 30 (HDTV 720p)	30 (1280x960) 30 (HDTV 720p)	30 (1280x960) 30 (HDTV 720p)	30 (1280x960) 30 (HDTV 720p)	30 (HDTV 1080i) 30 (HDTV 720p)	30 (HDTV 1080p)							
Audio support	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way	Two-way	Two-way	
Alarm in-/outputs	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	1/1	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	
Intelligent video	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm Active Gatekeeper AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm Active Gatekeeper AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm Active Gatekeeper AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm Active Gatekeeper AXIS Camera Application Platform
Security	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X
Network	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
Power	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> PoE Class 3/High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> High PoE <sup>(b)</sup>	DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> High PoE <sup>(b)</sup>	AC/DC <sup>(a)</sup> PoE IEEE 802.3af Class 3 <sup>(a)</sup> High PoE <sup>(b)</sup>	AC/DC <sup>(a)</sup> PoE IEEE 802.3af Class 3	AC/DC <sup>(a)</sup> PoE IEEE 802.3af Class 3	AC/DC <sup>(a)</sup> PoE IEEE 802.3af Class 3
Outdoor use	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready	Outdoor ready	Outdoor ready
Other	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, Lightfinder technology, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	RS-422/RS-485, WDR, digital PTZ, pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(a)</sup> , AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup>	WDR-Dynamic capture, pixel counter, memory card slot, AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup> , Arctic Temperature Control <sup>(b)</sup>	WDR-Dynamic capture, pixel counter, memory card slot, AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup> , Arctic Temperature Control <sup>(b)</sup>	WDR-Dynamic capture, pixel counter, memory card slot, AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup> , Arctic Temperature Control <sup>(b)</sup>	WDR-Dynamic capture, pixel counter, memory card slot, AVHS <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup> , Arctic Temperature Control <sup>(b)</sup>	RS-422/RS-485, Memory card slot, analog video out, pan/tilt head support IP66 and NEMA 4X ratings <sup>(a)</sup> , ONVIF, Corridor Format <sup>(a)</sup> , Arctic Temperature Control <sup>(b)</sup>	Memory card slot, IP66 and NEMA 4X ratings, ONVIF, Corridor Format, AVHS <sup>(a)</sup>	Memory card slot, IP66 and NEMA 4X ratings, ONVIF, Corridor Format, AVHS <sup>(a)</sup>	Memory card slot, IP66 and NEMA 4X ratings, ONVIF, Corridor Format, AVHS <sup>(a)</sup>
Axis Part #	0523-001 <sup>(a)</sup> 0527-001 <sup>(b)</sup>	0524-001 <sup>(a)</sup> 0528-001 <sup>(b)</sup>	0525-001 <sup>(a)</sup> 0529-001 <sup>(b)</sup>	0526-001 <sup>(a)</sup> 0530-001 <sup>(b)</sup>	0527-001 <sup>(a)</sup> 0531-001 <sup>(b)</sup>	0528-001 <sup>(a)</sup> 0532-001 <sup>(b)</sup>	0529-001 <sup>(a)</sup> 0533-001 <sup>(b)</sup>	0530-001 <sup>(a)</sup> 0534-001 <sup>(b)</sup>	0437-001 <sup>(a)</sup> 0438-001 <sup>(b)</sup>	0438-001 <sup>(a)</sup> 0439-001 <sup>(b)</sup>	0439-001 <sup>(a)</sup> 0440-001 <sup>(b)</sup>	0440-001 <sup>(a)</sup> 0441-001 <sup>(b)</sup>	0304-001 <sup>(a)</sup> 0348-001 <sup>(b)</sup>	0509-001	0509-001	0509-001	0509-001

Notations (a) and (b) refer to the corresponding product models for the column; (1) AXIS P1355/-E and AXIS P1357/-E also supports DC-iris lens; (2) AVHS - AXIS Video Hosting System with One-Click Camera Connection; (3) 1440x900 (1.3 MP) scaled resolution available via VAPIX<sup>®</sup>; (4) 1400 x 1050 (1.4MP) scaled resolution available via VAPIX<sup>®</sup>

## Axis covert cameras

## Axis fixed dome network cameras

	AXIS P85 Series			AXIS P12 Series			AXIS M30 Series														
	AXIS P8513	AXIS P8514	AXIS P1204	AXIS P1214-E <sup>(a)</sup> AXIS P1214-E <sup>(b)</sup>	AXIS M3011	AXIS M3014	AXIS M3004-V	AXIS M3005-V	AXIS M3006-V	AXIS M3007-P <sup>(a)</sup> AXIS M3007-PV <sup>(b)</sup>											
Image sensor	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/2.7" progressive scan CMOS	1/3.6" progressive scan CMOS	1/3.2" progressive scan CMOS											
Lens	3.7 mm/F1.8 fixed iris	3.7 mm/F1.8 fixed iris	3.7 mm/F2.5 fixed iris	3.7 mm/F2.5 <sup>(a)</sup> 2.8 mm/F2.0 <sup>(b)</sup> fixed iris	3.0 mm/F2.0 fixed iris	2.8 mm/F2.0 fixed iris	2.8 mm, F2.8, fixed iris, M12 mount	2.8 mm, F2.8, fixed iris, M12 mount	1.6 mm, F2.8, fixed iris M12 mount	1.3 mm, F2.8, fixed iris M12 mount											
Horizontal angle of view	48°	57°	57°	57° <sup>(a)</sup> 81° <sup>(b)</sup>	66°	80°	80°	118°	134°	187°											
Day and night																					
Min illumination/light sensitivity (lux)	1	1	1.2 - 10,000	1.2 - 10,000 <sup>(a)</sup> 1 - 10,000 <sup>(b)</sup>	1 - 100,000	1.5 - 100,000	1.5 - 100,000	1.5 - 100,000	0.6 - 200,000	0.6 - 200,000											
Video compression	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG MPEG-4	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG											
Max video resolution (pixels)	800 x 600	1280 x 800 (1 MP) <sup>(c)</sup>	HDTV 720p 1280x720	HDTV 720p 1280x720	640 x 480	1280 x 800 (1 MP)	1280x800 (1 MP)	HDTV 1080p 1920x1080 (2 MP)	2048x1536 (3 MP)	2592x1944 (5 MP)											
Frames per second	30 (800x600) 30 (HDTV 720p)	30 (1280x800) 30 (HDTV 720p)	30 (HDTV 720p)	30 (HDTV 720p)	30 (640x480)	30 (1280x800) 30 (HDTV 720p)	30 (1280x800) 30 (HDTV 720p)	30 (HDTV 1080p)	20 (2048x1536) 30 (HDTV 1080p) 30 (1600x1200)	12 (2592x1944)											
Audio support																					
Alarm in-/outputs			1/1	1/1																	
Intelligent video	Motion detection Tampering alarm	Motion detection Tampering alarm	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform											
Security	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X											
Network	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS											
Power	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2											
Outdoor use				Outdoor ready sensor unit only <sup>(b)</sup>																	
Other	Eye-level covert camera, digital PTZ, pixel counter, AVHS <sup>(c)</sup> , ONVIF, Available in white <sup>(a)</sup> , black <sup>(a)</sup> , and chrome <sup>(a)</sup>	Eye-level covert camera, digital PTZ, pixel counter, AVHS <sup>(c)</sup> , ONVIF, Available in white <sup>(a)</sup> , black <sup>(a)</sup> , and chrome <sup>(a)</sup>	Memory card slot, AVHS <sup>(c)</sup> , ONVIF	IP66-rated sensor unit <sup>(b)</sup> , memory card slot, AVHS <sup>(c)</sup> , ONVIF	Recessed mounting, digital PTZ, pixel counter, AVHS <sup>(c)</sup> , ONVIF	Recessed mounting, digital PTZ, pixel counter, AVHS <sup>(c)</sup> , ONVIF	Vandal resistant, IP42 rating, digital PTZ, pixel counter, memory card slot, AVHS <sup>(c)</sup> , ONVIF, Corridor Format	Vandal resistant, IP42 rating, digital PTZ, pixel counter, memory card slot, AVHS <sup>(c)</sup> , ONVIF, Corridor Format	Vandal resistant, IP42 rating, digital PTZ, pixel counter, memory card slot, AVHS <sup>(c)</sup> , ONVIF, Corridor Format	Vandal resistant, IP42 rating, digital PTZ, pixel counter, memory card slot, AVHS <sup>(c)</sup> , ONVIF, Corridor Format											
Axis Part #	0451-004 <sup>(a)</sup> 0452-004 <sup>(b)</sup> 0453-004 <sup>(c)</sup>	0454-004 <sup>(a)</sup> 0455-004 <sup>(b)</sup> 0456-004 <sup>(c)</sup>	0531-001	0532-001 <sup>(a)</sup> 0533-001 <sup>(b)</sup>	0284-001	0285-001	0516-001	0517-001	0514-001	0543-001 <sup>(a)</sup> 0515-001 <sup>(b)</sup>											

Notations (a) and (b) refer to the corresponding product models for the column; (1) Special firmware needed. Available for partners on Partner Pages; (2) AVHS - AXIS Video Hosting System with One-Click Connection; (3) 1440x900 (1.3 MP) scaled resolution via VAPIX<sup>®</sup>

Axis fixed dome network cameras

	AXIS M30 Series			AXIS M31-R Series			AXIS M31-VE Series			AXIS M32 Series			AXIS P33 Series										
	AXIS M3024-LVE	AXIS M3025-VE	AXIS M3026-VE	AXIS M3113-R	AXIS M3114-R	AXIS M3113-VE <sup>(a)</sup> AXIS M3113-VE Nocap <sup>(b)</sup>	AXIS M3114-VE <sup>(a)</sup> AXIS M3114-VE Nocap <sup>(b)</sup>	AXIS M3203 <sup>(a)</sup> AXIS M3203-V <sup>(b)</sup>	AXIS M3204 <sup>(a)</sup> AXIS M3204-V <sup>(b)</sup>	AXIS P3301 <sup>(a)</sup> AXIS P3301-V <sup>(b)</sup>	AXIS P3304 <sup>(a)</sup> AXIS P3304-V <sup>(b)</sup>												
Image sensor	1/4" progressive scan CMOS	1/2.7" progressive scan CMOS	1/3.6" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS	1/4" progressive scan CMOS												
Lens	2.8 mm/F2.0 fixed iris	3.6 mm/F2.0 fixed iris	2.0 mm/F2.0 fixed iris	2.9 mm/F2.0 fixed iris	Standard: 2.9 mm/F2.0 2 mm: 1.97 mm/F3.0	2.9 mm/F2.0 fixed iris	Standard: 2.9 mm/F2.0 2 mm: 1.97 mm/F3.0	2.8 - 10 mm/F1.7 fixed iris	Varifocal 2.8 - 10 mm/F1.7 fixed iris	2.8 - 10 mm/F1.3 DC-iris	Varifocal 2.8 - 10 mm/F1.7 DC-iris												
Horizontal angle of view	77°	91°	106°	66°	Standard: 80° 2 mm: 105°	66°	Standard: 80° 2 mm: 105°	66° - 18°	80° - 22°	72° - 23°	80° - 22°												
Day and night	Automatic	Automatic	Automatic																				
Min illumination/light sensitivity (lux)	Color: 0.8-100000 B/W: 0.16 0 (with IR illumination)	Color: 0.8-100000 B/W: 0.16	Color: 0.3-200000 B/W: 0.06	1 - 100,000	1 - 100,000	1 - 100,000	1 - 100,000	0.9 - 100,000	0.9 - 100,000	0.9 - 100,000	0.9 - 100,000												
Video compression	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG												
Max video resolution (pixels)	1280x800 (1 MP)	1920x1080 (2MP) HDTV 1080p	2048x1536 (3MP) HDTV 1080p	800x600	1280x800 (1 MP) <sup>(2)</sup>	800x600	1280x800 (1 MP) <sup>(2)</sup>	800 x 600	1280 x 800 (1 MP) <sup>(2)</sup>	640 x 480	1280 x 800 (1 MP) <sup>(2)</sup>												
Frames per second	30 (1280x800) 30 (HDTV 720p)	30 (1920x1080) 30 (HDTV 1080p)	30 (1600x1200) 20 (HDTV 1080p)	30 (800x600)	30 (1280x800) 30 (HDTV 720p)	30 (800x600)	30 (1280x800) 30 (HDTV 720p)	30 (800x600)	30 (1280x800) 30 (HDTV 720p)	30 (640x480)	30 (1280x800) 30 (HDTV 720p)												
Audio support																							
Alarm in-/outputs	1/1	1/1	1/1																				
Intelligent video	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform												
Security	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X												
Network	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS												
Power	POE IEEE 802.3af/802.3at Class 2	POE IEEE 802.3af/802.3at Class 2	POE IEEE 802.3af/802.3at Class 2	POE IEEE 802.3af Class 1	POE IEEE 802.3af Class 2																		
Outdoor use	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready	Outdoor ready												
Other	IP66 and NEMA 4X ratings, IK10 impact-resistant, memory card slot, Corridor Format, Pixel Counter, AVHS <sup>(1)</sup> , ONVIF, PTZ	IP66 and NEMA 4X ratings, IK10 impact-resistant, memory card slot, Corridor Format, Pixel Counter, AVHS <sup>(1)</sup> , ONVIF, Digital PTZ	IP66 and NEMA 4X ratings, IK10 impact-resistant, memory card slot, Corridor Format, Pixel Counter, AVHS <sup>(1)</sup> , ONVIF, Digital PTZ	Rugged connectors for mobile surveillance, IP66, IP67 and NEMA 4X ratings, WDR, digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Rugged connectors for mobile surveillance, IP66, IP67 and NEMA 4X ratings, WDR, digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Rugged connectors for mobile surveillance, IP66, IP67 and NEMA 4X ratings, WDR, digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Rugged connectors for mobile surveillance, IP66, IP67 and NEMA 4X ratings, WDR, digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Tamper resistant, Vandal resistant <sup>(b)</sup> , digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Tamper resistant, Vandal resistant <sup>(b)</sup> , digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Tamper resistant, Vandal resistant <sup>(b)</sup> , digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>	Tamper resistant, Vandal resistant <sup>(b)</sup> , digital PTZ, pixel counter, AVHS <sup>(1)</sup> , ONVIF, Corridor Format <sup>TM</sup>												
Axis Part #	0535-001	0536-001	0547-001	0330-001	0342-001	0412-001 <sup>(a)</sup> 0441-001 <sup>(b)</sup>	0413-001 <sup>(a)</sup> 0442-001 <sup>(b)</sup>	0336-001 <sup>(a)</sup> 0345-001 <sup>(b)</sup>	0337-001 <sup>(a)</sup> 0346-001 <sup>(b)</sup>	0290-001 <sup>(a)</sup> 0292-001 <sup>(b)</sup>	0352-001 <sup>(a)</sup> 0353-001 <sup>(b)</sup>												

Notations (a) and (b) refer to the corresponding product models for the column; (1) AVHS - AXIS Video Hosting System with One-Click Camera Connection; (2) 1440 x 900 (1.3 MP) scaled resolution available via VAPIX<sup>SM</sup>.

## Axis fixed dome network cameras

## AXIS P33 Series

	AXIS P3353	AXIS P3354	AXIS P3364-V <sup>(a)</sup> / AXIS P3364-VE <sup>(b)</sup> /LVE <sup>(d)</sup>	AXIS P3384-V <sup>(a)</sup> / AXIS P3384-VE <sup>(b)</sup>	AXIS P3346	AXIS P3346-V <sup>(a)</sup> / AXIS P3346-VE <sup>(b)</sup>	AXIS P3367-V <sup>(a)</sup> / AXIS P3367-VE <sup>(b)</sup>
<b>Image sensor</b>	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" (effective) progressive scan CMOS	1/3" (effective) progressive scan CMOS	1/3.2" progressive scan CMOS
<b>Lens</b>	Varifocal, remote focus and zoom, IR corrected, P-Iris F1.2 12 mm: 2.5-6 mm/ mm/F1.4	Varifocal, remote focus and zoom, IR corrected, P-Iris 6 mm: 2.5-6 mm/F1.2 12 mm: 3.3-12 mm/F1.4	Varifocal, remote focus and zoom, IR corrected, P-Iris 6 mm: 2.5-6 mm/F1.2 12 mm: 3.3-12 mm/F1.4	Varifocal, remote focus and zoom, IR corrected, P-Iris 6 mm: 2.5-6 mm/F1.2 12 mm: 3.3-12 mm/F1.4	Varifocal, remote focus and zoom, IR-corrected, P-Iris, 3-9 mm/F1.2	Varifocal, remote focus and zoom, IR-corrected, P-Iris, 3-9 mm/F1.2	Varifocal, remote focus and zoom, IR-corrected, P-Iris, 3-9 mm/F1.2
<b>Horizontal angle of view</b>	6 mm: 105° - 49° 12 mm: 82° - 24°	6 mm: 105° - 49° 12 mm: 82° - 24°	6 mm: 105° - 49° 12 mm: 82° - 24°	84° - 30°	84° - 30°	84° - 30°	84° - 30°
<b>Day and night</b>	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
<b>Min illumination/light sensitivity (lux)</b>	6mm: 0.1 (color), 0.02(B/W) 12mm: 0.15 (color), 0.03(B/W)	6mm: 0.1 (color), 0.02(B/W) 12mm: 0.15 (color), 0.03(B/W)	6mm: 0.1 (color), 0.02(B/W) 12mm: 0.15 (color), 0.03(B/W) 0 (with IR illumination) <sup>(c,d)</sup>	With dynamic capture: 0.5 (color), 0.08 (B/W) With Lightfinder: 0.15 (color), 0.03 (B/W)	0.5 (color), 0.08 (B/W)	0.5 (color), 0.08 (B/W)	0.2 (color), 0.04 (B/W)
<b>Video compression</b>	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG
<b>Max video resolution (pixels)</b>	800x600	1280x960 (approx. 1.3 MP) <sup>(a)</sup>	1280x960 (approx. 1.3 MP) <sup>(a)</sup>	1280x960 (approx. 1.3 MP) <sup>(a)</sup>	2048x1536 (3 MP)	2048x1536 (3 MP)	2592x1944 (5 MP)
<b>Frames per second (60/50 Hz)</b>	30 (800x600)	30 (1280x960) 30 (HDTV 720p)	30 (1280x960) 30 (HDTV 720p)	30 (1280x960) 30 (HDTV 720p)	20 (3MP, 2048x1536) 30 (HDTV 1080p) 30 (2MP, 1600x1200)	20 (3MP, 2048x1536) 30 (HDTV 1080p) 30 (2MP, 1600x1200)	12 (5 MP, 2592x1944), 20 (3 MP, 2048x1536), 30 (HDTV 1080p), 30 (2MP, 1600x1200)
<b>Audio support</b>			Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>	Two-way, Built-in mic <sup>(a)</sup>
<b>Alarm in-/outputs</b>			1/1	1/1	1/1	1/1	1/1
<b>Intelligent video</b>	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform
<b>Security</b>	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X
<b>Network</b>	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
<b>Power</b>	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2 <sup>(a)</sup> , Class 3 <sup>(a)</sup>	PoE IEEE 802.3af Class 2 <sup>(a)</sup> , Class 3 <sup>(a)</sup>	PoE IEEE 802.3af Class 2	PoE IEEE 802.3af Class 2 <sup>(a)</sup> , Class 3 <sup>(a)</sup>	PoE IEEE 802.3af Class 2 <sup>(a)</sup> , Class 3 <sup>(a)</sup>
<b>Outdoor use</b>			Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>		Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>
<b>Other</b>	Tamper resistant, WDR, digital PTZ, pixel counter, memory card slot, Lightfinder technology, AVHS <sup>(i)</sup> , ONVIF, Corridor Format <sup>(m)</sup>	Tamper resistant, WDR, digital PTZ, pixel counter, memory card slot, Lightfinder technology, AVHS <sup>(i)</sup> , ONVIF, Corridor Format <sup>(m)</sup>	Vandal resistant, IP66 and NEMA 4X ratings <sup>(n)</sup> , WDR, digital PTZ, pixel counter, memory card slot, Lightfinder technology, Built-in adjustable IR (100 ft range) <sup>(c,d)</sup> , AVHS <sup>(i)</sup> , ONVIF, Corridor Format <sup>(m)</sup>	Vandal resistant, IP66 and NEMA 4X ratings <sup>(n)</sup> , WDR-Dynamic capture, digital PTZ, pixel counter, memory card slot, Lightfinder technology, Built-in adjustable IR (100 ft range) <sup>(c,d)</sup> , AVHS <sup>(i)</sup> , ONVIF, Corridor Format <sup>(m)</sup>	Tamper resistant, WDR, digital PTZ, pixel counter, memory card slot, multi-view streaming, AVHS <sup>(i)</sup> , ONVIF, Corridor Format <sup>(m)</sup>	Vandal resistant, IP66 and NEMA 4X ratings <sup>(n)</sup> , WDR, digital PTZ, pixel counter, memory card slot, multi-view streaming, AVHS <sup>(i)</sup> , ONVIF, Corridor Format <sup>(m)</sup>	Vandal resistant, IP66 and NEMA 4X ratings <sup>(n)</sup> , WDR, digital PTZ, pixel counter, memory card slot, multi-view streaming
<b>Axis Part #</b>	6 mm: 0464-001 12 mm: 0466-001	6 mm: 0465-001 12 mm: 0467-001	6mm:0481-001 <sup>(a)</sup> ,0482-001 <sup>(a)</sup> 6mm:0485-001 <sup>(a)</sup> ,0486-001 <sup>(a)</sup> 12mm:0471-001 <sup>(a)</sup> ,0484-001 <sup>(a)</sup> 12mm:0488-001 <sup>(a)</sup> ,0483-001 <sup>(a)</sup>	0511-001 <sup>(a)</sup> 0512-001 <sup>(a)</sup>	0369-001	0370-001 <sup>(a)</sup> 0371-001 <sup>(a)</sup>	0406-001 <sup>(a)</sup> 0407-001 <sup>(a)</sup>

Notations (a) and (b) refer to the corresponding product models for the column; (1) AVHS - AXIS Video Hosting System with One-Click Camera Connection; (2) 1440 x 900 (1.3 MP) scaled resolution available via VAPIX<sup>(g)</sup>; 3) 1400x1050 (1.4MP) scaled resolution available via VAPIX<sup>(g)</sup>

Axis pan/tilt/zoom network cameras

		AXIS M50 Series				AXIS P55 Series			
		 AXIS M5013 PTZ <sup>(a)</sup> AXIS M5013-V <sup>(b)</sup>	 AXIS M5014 <sup>(a)</sup> AXIS M5014-V <sup>(b)</sup>	 AXIS 214 PTZ	 AXIS P5414-E	 AXIS P5512-E <sup>(a)</sup> AXIS P5522-E <sup>(b)</sup>	 AXIS P5522 <sup>(a)</sup> AXIS P5522-E <sup>(b)</sup>	 AXIS P5534 <sup>(a)</sup> AXIS P5534-E <sup>(b)</sup>	 AXIS P5544
Image sensor		1/2" progressive scan CMOS	1/4" progressive scan CMOS	1/4" ExView HAD CCD	1/2.8" progressive scan CMOS	1/4" CCD	1/4" ExViewHAD progressive scan CCD	1/3" progressive scan CCD	1/3" progressive scan CCD
Lens		2.7 mm/F1.8 fixed iris 3x digital zoom	3.6 mm/F1.8 3x digital zoom	4.1 - 73.8 mm/F1.3 auto iris and autofocus 18x optical zoom 12x digital zoom	4.7 - 84.6 mm/F1.6-2.8 auto iris and autofocus 18x optical zoom 12x digital zoom	3.8 - 46 mm/F1.6 autofocus 12x optical zoom 4x digital zoom	4.1 - 73.8 mm/F1.4 auto iris and autofocus 18x optical zoom 12x digital zoom	4.7 - 84.6 mm/F1.6 auto iris and autofocus 18x optical zoom 12x digital zoom	Zoom lens: 4.7-84.6mm/F1.6 auto iris and autofocus 18x optical zoom 12x digital zoom Panopsis lens: 2.7 mm
Horizontal angle of view		140° - 44°	45°	48° - 2.7°	59° - 4°	51.6° - 4.4°	47.0° - 2.8°	53.1° - 2.0°	55.2° - 3.2°
Day and night		10 lux wide mode 20 lux tele mode	1.4 (color)	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic
Min illumination/light sensitivity (lux)				0.3 (color) 0.005 (B/W)	0.4 (color) 0.04 (B/W)	1 (color) 0.3 (B/W)	0.5 (color) 0.01 (B/W)	0.74 (color) 0.04 (B/W)	0.74 (color) 0.04 (B/W)
Video compression		MPEG-4, Motion JPEG	H.264, Motion JPEG	Motion JPEG MPEG-4	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG
Max video resolution (pixels)		640x480	SVGA 800x600	4CIF: 704x480 (60 Hz) 704x576 (60 Hz)	1280x720 HDTV 720p	4CIF: 704x480 (60 Hz) 704x576 (60 Hz)	D1: 720x480 (60 Hz) 720x576 (50 Hz)	D1: 720x480 (60 Hz) 720x576 (50 Hz)	HDTV 720p 1280x720
Frames per second (60 Hz)		30 (640x480) at max. zoom	30	30 (4CIF)	30	30	30 (D1)	30 (HDTV 720p)	30 (HDTV 720p)
Pan/Tilt/Zoom		20 presets ±70° pan ±52° tilt Guard tour	25 presets ±180° pan 90° tilt	20 presets ±170° pan 120° tilt	100 presets 135° to 350° pan 0° to 90° tilt Limited guard tour	360° pan via Auto-tilt 180° tilt Limited guard tour	100 presets 360° pan via Auto-tilt 180° tilt Limited guard tour	100 presets 360° pan via Auto-tilt 180° tilt Limited guard tour	100 presets 360° pan via Auto-tilt 180° tilt Limited guard tour
Audio support		Two-way, built-in mic	One-way, built-in mic <sup>(d)</sup>	Two-way	Two-way	Two-way <sup>(a),(b)</sup>	Two-way <sup>(a),(b)</sup>	Two-way <sup>(a),(b)</sup>	Two-way <sup>(a)</sup>
Alarm in-/outputs		1/1		1/1	4 configurable inputs/ outputs	4 configurable inputs/ outputs <sup>(a),(b)</sup>	4 configurable inputs/ outputs <sup>(a),(b)</sup>	4 configurable inputs/ outputs <sup>(a),(b)</sup>	4 configurable inputs/ outputs <sup>(b)</sup>
Intelligent video		Motion detection Audio detection <sup>(a)</sup> Audio detection	Motion detection, Audio detection <sup>(a)</sup> , AXIS Camera Application Platform	Motion detection Audio detection	Motion detection Audio detection AXIS Camera Application Platform	Motion detection Audio detection <sup>(a),(b)</sup> Advanced Gatekeeper AXIS Camera Application Platform	Motion detection Audio detection <sup>(a),(b)</sup> Advanced Gatekeeper AXIS Camera Application Platform <sup>(a)</sup>	Motion detection Audio detection <sup>(a),(b)</sup> Advanced Gatekeeper AXIS Camera Application Platform <sup>(a)</sup>	Motion detection Audio detection <sup>(a)</sup> Advanced Gatekeeper AXIS Camera Application Platform
Security		Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X
Network		IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
Power		DC PoE IEEE 802.3af Class 1	PoE IEEE 802.3af Class 3	DC	PoE IEEE 802.3at (Midspan not supplied)	AC/DC <sup>(a),(b)</sup> PoE IEEE 802.3af Class 3	AC/DC <sup>(a),(b)</sup> PoE+ IEEE 802.3at (Midspan supplied)	AC/DC <sup>(a),(b)</sup> PoE+ IEEE 802.3at (Midspan supplied)	AC/DC <sup>(a)</sup> PoE+ IEEE 802.3at (Midspan supplied)
Outdoor use			Requires housing		Outdoor ready	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(b)</sup>	Outdoor ready <sup>(a)</sup>	Outdoor ready <sup>(a)</sup>
Other		Continuous motion 24/7, Vandal resistant <sup>(e)</sup>	IP51 rating, IP66 rating <sup>(b)</sup> , pixel counter, memory card slot, AVHS <sup>(a)</sup> , ONVIF	AVHS	Pixel counter, memory card slot, IP66 and NEMA 4X ratings <sup>(b)</sup> , AVHS <sup>(a)</sup> , ONVIF	Pixel counter, memory card slot, IP51 rating <sup>(a)</sup> , IP66 and NEMA 4X ratings <sup>(b)</sup> , WDR, AVHS <sup>(a)</sup> , ONVIF	Pixel counter, memory card slot, IP51 rating <sup>(a)</sup> , IP66 and NEMA 4X ratings <sup>(b)</sup> , WDR, AVHS <sup>(a)</sup> , ONVIF	Pixel counter, memory card slot, IP51 rating, WDR, AVHS <sup>(a)</sup> , ONVIF	360° panoramic view, pixel counter, memory card slot, IP51 rating, WDR, AVHS <sup>(a)</sup> , ONVIF
Axis Part #		0257-004 <sup>(a)</sup> , 0280-004 <sup>(a)</sup>	0398-001 <sup>(a)</sup> 0552-001 <sup>(a)</sup>	0246-004	0588-001	0409-001 <sup>(a)</sup> , 0411-001 <sup>(a)</sup>	0420-004 <sup>(a)</sup> , 0422-004 <sup>(a)</sup>	0310-004 <sup>(a)</sup> , 0312-004 <sup>(a)</sup>	0314-004 <sup>(a)</sup> , 0316-004 <sup>(a)</sup>

Notations (a) and (b) refer to the corresponding product models for the column; (1) With multi-connector cable - sold separately; (2) AVHS - AXIS Video Hosting System with One-Click Camera Connection; (3) Special firmware needed. Available for partners on Partner Pages

## Axis pan/tilt/zoom network cameras

		AXIS Q60 Series				AXIS Q87-E Series			
									
<b>Image sensor</b>	1/4" EXView HAD progressive scan CCD	1/3" progressive scan CCD	1/2.8 progressive scan CMOS	1/4" EXView HAD progressive scan CCD	1/3" progressive scan CCD	1/3" progressive scan CMOS	1/3" progressive scan CMOS	1/3" progressive scan CMOS	
<b>Lens</b>	3.3 - 119 mm/F1.4, auto iris and autofocus, 36x optical zoom 12x digital zoom	4.7 - 84.6 mm/F1.6, auto iris and autofocus, 18x optical zoom 12x digital zoom	4.7 - 94 mm/F1.6, auto iris and autofocus, 20x optical zoom 12x digital zoom	3.4-3.3 - 119 mm/F1.4, auto iris and autofocus, 36x optical zoom 12x digital zoom	4.4 - 132 mm/F1.4, auto iris and autofocus, 30x optical zoom 12x digital zoom	4.45 - 89 mm/F1.6, auto iris and autofocus, 20x optical zoom 12x digital zoom	Visual camera: 1/3" progressive scan CMOS Thermal camera: Uncooled micro bolometer	Visual camera: 1/3" progressive scan CMOS Thermal camera: Uncooled micro bolometer	
<b>Horizontal angle of view</b>	57.2° - 1.7°	55.2° - 3.2°	54.1° - 2.9° in HDTV 1080p 376° - 2° in HDTV 720p	57.2° - 1.7°	62.9° - 2.2°	62.98° - 3.49°	Visual camera: 48.1° - 5.1° Thermal camera: 18° (35mm) or 9° (60mm)	Visual camera: 48.1° - 5.1° Thermal camera: 18° (35mm) or 9° (60mm)	
<b>Day and night</b>	Automatic	Automatic	Automatic	Automatic	Automatic	Automatic	Visual camera: automatic	Visual camera: automatic	
<b>Detection range (m/yd.)</b>							35mm: 1050/1148 <sup>(a)</sup> , 3200/3500 <sup>(a)</sup> 60mm: 1800/1970 <sup>(a)</sup> , 5500/6015 <sup>(a)</sup>	35mm: 1050/1148 <sup>(a)</sup> , 3200/3500 <sup>(a)</sup> 60mm: 1800/1970 <sup>(a)</sup> , 5500/6015 <sup>(a)</sup>	
<b>Sensitivity</b>							NETD < 100 mK	NETD < 100 mK	
<b>Min illumination/light sensitivity (lux)</b>	0.5 (color) 0.008 (B/W)	0.74 (color) 0.04 (B/W)	0.8 (color) 0.04 (B/W)	0.5 (color) 0.008 (B/W)	0.2 (color) 0.04 (B/W)	0.6 (color) 0.04 (B/W)	Visual camera: 2 (color), 0.2 (B/W)	Visual camera: 2 (color), 0.2 (B/W)	
<b>Video compression</b>	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	H.264, Motion JPEG	
<b>Max video resolution (pixels)</b>	Extended D1: 752x480 (60 Hz) 736x576 (50 Hz)	HDTV 720p 1280x720	HDTV 1080p 1920x1080	Extended D1: 752x480 (60 Hz)	1280x720 HDTV 720p	1920x1080 HDTV 1080p	Visual camera: 1920x1080 (2MP) HDTV 1080i Thermal camera: 640x480	Visual camera: 1920x1080 (2MP) HDTV 1080i Thermal camera: 640x480	
<b>Frames per second (60 Hz)</b>	30 (Extended D1)	30 (HDTV 720p)	H.264: 30 (HDTV 1080p) H.264: 60 (HDTV 720p)	30	30	30	Visual camera: 30 (HDTV 1080i) 30 (HDTV 720p) Thermal camera: 8.3/30 <sup>(b)</sup>	Visual camera: 30 (HDTV 1080i) 30 (HDTV 720p) Thermal camera: 8.3/30 <sup>(b)</sup>	
<b>Pan/Tilt/Zoom</b>	100 presets, 360° endless pan, 220° tilt, Guard tour, four recording	100 presets, 360° endless pan, 220° tilt, Guard tour, four recording	100 presets, 360° endless pan, 220° tilt, Guard tour, four recording	256 presets, 360° endless pan 220° tilt, Guard tour, four recording	256 presets, 360° endless pan 220° tilt, Guard tour, four recording	256 presets, 360° endless pan 220° tilt, Guard tour, four recording	360° endless pan, 45° to -20° tilt Visual camera: 10x optical zoom and 12x digital zoom	360° endless pan, 45° to -20° tilt Visual camera: 10x optical zoom and 12x digital zoom	
<b>Audio support</b>				Two-way <sup>(a,1)</sup>	Two-way <sup>(a,1)</sup>	Two-way <sup>(a,1)</sup>			
<b>Alarm in-/outputs</b>	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	4 configurable inputs/outputs <sup>(a,1)</sup>	4 configurable inputs/outputs <sup>(a,1)</sup>	4 configurable inputs/outputs <sup>(a,1)</sup>			
<b>Intelligent video</b>	Motion detection, Auto-tracking, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Auto-tracking, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Auto-tracking, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Auto-tracking, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Auto-tracking, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Auto-tracking, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Tampering alarm, Active Gatekeeper, AXIS Camera Application Platform	Motion detection, Tampering alarm, Active Gatekeeper, AXIS Camera Application Platform	
<b>Security</b>	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	Multi-level passwords, IP filtering, HTTPS encryption, IEEE 802.1X	
<b>Network</b>	IP v4/v6, QoS	IP v4/v6, QoS	IP v4/v6, QoS	IP v4/v6, QoS	IP v4/v6, QoS	IP v4/v6, QoS	IP v4/v6, QoS	IP v4/v6, QoS	
<b>Power</b>	12 V DC	12 V DC	12 V DC	AC, PoE+ IEEE 802.3at High PoE (Midspan supplied)	AC, PoE+ IEEE 802.3at High PoE (Midspan supplied)	AC, PoE+ IEEE 802.3at High PoE (Midspan supplied)	24 V AC 50/60Hz, 200W, 230/120 V AC 50/60Hz	24 V AC 50/60Hz, 200W, 230/120 V AC 50/60Hz	
<b>Outdoor use</b>	Outdoor-ready with active cooling for operation in temperatures up to 75°C/167°F	Outdoor-ready with active cooling for operation in temperatures up to 75°C/167°F	Outdoor-ready with active cooling for operation in temperatures up to 75°C/167°F	Outdoor-ready <sup>(a)</sup>	Outdoor-ready <sup>(a)</sup>	Outdoor-ready <sup>(a)</sup>	Outdoor ready	Outdoor ready	
<b>Other</b>	Continuous motion 24/7, 2xSFP slots for fiber, 2xRJ-45 connectors, pixel counter, memory card slot, vandal-resistant, IP66 and NEMA 4X ratings, MIL-STD-810G, image stabilizer, WDR, AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, 2xSFP slots for fiber, 2xRJ-45 connectors, pixel counter, memory card slot, vandal-resistant, IP66 and NEMA 4X ratings, MIL-STD-810G, WDR, AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, 2xSFP slots for fiber, 2xRJ-45 connectors, pixel counter, memory card slot, vandal-resistant, IP66 and NEMA 4X ratings, MIL-STD-810G, WDR, AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, pixel counter, memory card slot, image stabilizer, WDR, IP66 and NEMA 4X ratings <sup>(a)</sup> , Arctic Temperature Control <sup>(a)</sup> , vandal-resistant <sup>(a)</sup> , AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, pixel counter, memory card slot, image stabilizer, WDR, IP66 and NEMA 4X ratings <sup>(a)</sup> , Arctic Temperature Control <sup>(a)</sup> , vandal-resistant <sup>(a)</sup> , AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, pixel counter, memory card slot, image stabilizer, WDR, IP66 and NEMA 4X ratings <sup>(a)</sup> , Arctic Temperature Control <sup>(a)</sup> , vandal-resistant <sup>(a)</sup> , AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, pixel counter, memory card slot, image stabilizer, WDR, IP66 and NEMA 4X ratings <sup>(a)</sup> , Arctic Temperature Control <sup>(a)</sup> , vandal-resistant <sup>(a)</sup> , AVHS <sup>®</sup> , ONVIF	Continuous motion 24/7, pixel counter, memory card slot, image stabilizer, WDR, IP66 and NEMA 4X ratings <sup>(a)</sup> , Arctic Temperature Control <sup>(a)</sup> , vandal-resistant <sup>(a)</sup> , AVHS <sup>®</sup> , ONVIF	
<b>Axis Part #</b>	0458-001	0460-001	0462-001	0558-004 <sup>(a)</sup> 0560-004 <sup>(a)</sup>	0570-004 <sup>(a)</sup> 0572-004 <sup>(a)</sup>	0564-004 <sup>(a)</sup> 0566-004 <sup>(a)</sup>	35mm: 0489-001 60mm: 0495-001	35mm: 0489-001 60mm: 0495-001	

Notations (a) and (b) refer to the corresponding product models for the column; (1) With multi-connector cable - sold separately; (2) AVHS - AXIS Video Hosting System with One-Click Camera Connection; (3) and (4) refer to detection range measured for (3) humans 1.8 m x 0.5 m and (4) vehicles 2.3 x 2.3 m; (5) Frame rate above 9 fps may be subject to export control regulations

Axis thermal network cameras

AXIS Q19 Series						
	AXIS Q1910	AXIS Q1910-E	AXIS Q1921	AXIS Q1921-E	AXIS Q1922	AXIS Q1922-E
Image sensor	Uncooled Micro bolometer	Uncooled Micro bolometer	Uncooled Micro bolometer	Uncooled Micro bolometer	Uncooled Micro bolometer	Uncooled Micro bolometer
Lens	13 mm/F1.25	13 mm/F1.25	10 mm/F1.2 19 mm/F1.0	10 mm/F1.2 19 mm/F1.0 60 mm/F1.2	10 mm/F1.2 19 mm/F1.0	10 mm/F1.2 19 mm/F1.0 35 mm/F1.2 60 mm/F1.2
Horizontal angle of view	17°	17°	10 mm: 51° 19 mm: 28°	10 mm: 51° 19 mm: 28° 35 mm: 16° 60 mm: 9°	10 mm: 57° 19 mm: 32°	10 mm: 57° 19 mm: 32° 35 mm: 18° 60 mm: 10°
Detection range (m/yd.)	200/220 <sup>(a)</sup> 550/600 <sup>(b)</sup>	200/220 <sup>(a)</sup> 550/600 <sup>(b)</sup>	10 mm: 200/220 <sup>(a)</sup> 460/515 <sup>(b)</sup> 19 mm: 380/415 <sup>(a)</sup> 870/950 <sup>(b)</sup>	10 mm: 200/220 <sup>(a)</sup> 460/515 <sup>(b)</sup> 19 mm: 380/415 <sup>(a)</sup> 870/950 <sup>(b)</sup> 35 mm: 700/765 <sup>(a)</sup> 2200/2405 <sup>(a)</sup> 60 mm: 1200/1312 <sup>(a)</sup> 3700/4046 <sup>(b)</sup>	10 mm: 200/220 <sup>(a)</sup> 460/515 <sup>(b)</sup> 19 mm: 380/415 <sup>(a)</sup> 870/950 <sup>(b)</sup>	10 mm: 320/350 <sup>(a)</sup> 990/1083 <sup>(b)</sup> 19 mm: 580/634 <sup>(a)</sup> 1800/1969 <sup>(b)</sup> 35 mm: 1050/1148 <sup>(a)</sup> 3200/3500 <sup>(a)</sup> 60 mm: 1800/1970 <sup>(a)</sup> 5500/6015 <sup>(a)</sup>
Sensitivity	NetD < 100 mK	NetD < 100 mK	NetD < 100 mK	NetD < 100 mK	NetD < 100 mK	NetD < 100 mK
Video compression	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG
Max video resolution (pixels)	160 x 128	160 x 128	384 x 288	384 x 288	640 x 480	640 x 480
Frames per second	8.3	8.3	8.3/30 <sup>(1)</sup>	8.3/30 <sup>(1)</sup>	8.3/30 <sup>(1)</sup>	8.3/30 <sup>(1)</sup>
Audio support	Two-way, Built-in mic	Two-way	Two-way, Built-in mic	Two-way	Two-way, Built-in mic	Two-way
Alarm in-/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs	2 configurable inputs/outputs
Intelligent video	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform
Security	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X
Network	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
Power	AC/DC PoE IEEE 802.3af Class 3	AC/DC PoE IEEE 802.3af Class 3	AC/DC PoE IEEE 802.3af Class 3	AC/DC PoE IEEE 802.3af Class 3	AC/DC PoE IEEE 802.3af Class 3	AC/DC PoE IEEE 802.3af Class 3
Outdoor use	Requires housing designed for thermal cameras	Outdoor ready	Requires housing designed for thermal cameras	Outdoor ready	Requires housing designed for thermal cameras	Outdoor ready
Other	RS-422/RS-485, memory card slot, palette setting, AVHS <sup>(2)</sup> , ONVIF	RS-422/RS-485, memory card slot, IP66 rating, palette setting, AVHS <sup>(2)</sup> , ONVIF	RS-422/RS-485, memory card slot, IP66 rating, palette setting, AVHS <sup>(2)</sup> , ONVIF	RS-422/RS-485, memory card slot, IP66 rating, palette setting, AVHS <sup>(2)</sup> , ONVIF	RS-422/RS-485, memory card slot, IP66 rating, palette setting, AVHS <sup>(2)</sup> , ONVIF	RS-422/RS-485, memory card slot, IP66 rating, palette setting, AVHS <sup>(2)</sup> , ONVIF
Axis Part #	0334-001	0335-001	10mm: 0388-001 19mm: 0384-001	10mm: 0389-001 19mm: 0385-001 35mm: 0390-001 60mm: 0391-001	10mm: 0506-001 19mm: 0502-001	10mm: 0507-001 19mm: 0503-001 35mm: 0477-001 60mm: 0478-001

Notifications (a) and (b) refer to detection range measured for (a) humans 1.8 m x 0.5 m and (b) vehicles. 2.3 x 2.3 m, calculated with Johnson's criteria; (1) 30 fps available for EU001 compliant countries such as U.S. and Canada; (2) AVHS - AXIS Video Hosting System with One-Click Camera Connection

## Axis video encoders

	1-channel video encoders				4-channel video encoders				
	AXIS M7001	AXIS Q7401	AXIS Q7411	AXIS M7014	AXIS P7214	AXIS P7224	AXIS Q7404	AXIS Q7414	AXIS Q7424-R
									
Video compression	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG	H.264 Motion JPEG
Max video resolution (pixels)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)	D1: 720x480 (NTSC)
Frames per second H.264 (NTSC) in maximum resolution	30 (D1)	30 (D1)	60 (D1)	15 (D1)	30 (D1)	30 (D1)	30 (D1)	30 (D1)	30 (D1)
Frames per second Motion JPEG (NTSC) in maximum resolution	30 (D1)	30 (D1)	60 (D1)	15 (D1)	30 (D1)	30 (D1)	30 (D1)	30 (D1)	30 (D1)
Video source	1 BNC composite input	1 BNC composite input	1 BNC composite input	4 BNC composite inputs	4 BNC composite inputs	4 BNC composite inputs	4 BNC composite inputs	4 BNC composite inputs	4 BNC composite inputs
Audio support		Two-way	Two-way	Two-way	Two-way	Two-way	Two-way on one channel	Two-way	Two-way
Alarm in-/outputs		4 configurable inputs/outputs	4 configurable inputs/outputs		4 configurable inputs/outputs	4 configurable inputs/outputs	2 configurable inputs/outputs per channel	2 configurable inputs/outputs per channel	4 configurable inputs/outputs
Intelligent video	Motion detection	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm AXIS Camera Application Platform	Motion detection Tampering alarm	Motion detection Audio detection Tampering alarm	Motion detection Audio detection Tampering alarm	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform	Motion detection Audio detection Tampering alarm AXIS Camera Application Platform
Pan/tilt/zoom support	●	●	●	●	●	●	●	●	●
Security	Multi-level passwords IP filtering HTTPS encryption, IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X	Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X
Network	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS	IPv4/v6, QoS
Power	PoE IEEE 802.3af Class 2, supports power output for small covert camera	DC PoE IEEE 802.3af Class 2/3, supports power output for analog camera	DC, PoE IEEE 802.3af Class 2	DC PoE IEEE 802.3af Class 3	DC PoE IEEE 802.3af Class 3	DC	DC	DC	PoE IEEE 802.3af Class 3
Serial connectors	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS-422/RS-485
Other	AVHS <sup>(2)</sup> , ONVIF	Memory card slot, AVHS <sup>(1)</sup> , ONVIF	Coax PTZ Control, memory card slot, AVHS <sup>(1)</sup> , ONVIF	Memory card slot, Quad-view, AVHS <sup>(1)</sup> , ONVIF	Memory card slot, Quad-view, AVHS <sup>(1)</sup> , ONVIF	Quad-view, AVHS <sup>(1)</sup> , ONVIF	AVHS <sup>(1)</sup> , ONVIF	AVHS <sup>(1)</sup> , ONVIF	Rugged, operates in temperatures from -40°C/-40°F to 75°C/167°F, memory card slot, Quad-view, AVHS <sup>(1)</sup> , ONVIF
Axis Part #	0298-001	0288-004	0518-004	0415-004	0417-004	0418-001	0291-004	0354-001	0487-001

(1) AVHS – Axis Video Hosting System with One-Click Connection; (2) Special firmware needed. Available for partners on Partner Pages

## Axis video encoders

		6- and 16- channel video encoders				
						
Video compression		H.264 Motion JPEG				
Max video resolution (pixels)		D1: 720x480 (NTSC)				
Frames per second		15 (D1) per channel	30 (D1) per channel	30 (D1) per channel	30 (D1) per channel	30 (D1) per channel
Maximum resolution		15 (D1) per channel	30 (D1) per channel	30 (D1) per channel	30 (D1) per channel	30 (D1) per channel
Video source		16 BNC composite inputs	6 BNC composite inputs			
Audio support			4 configurable inputs/outputs	Two-way	Two-way	
Alarm in-/outputs			4 configurable inputs/outputs	4 configurable inputs/output	4 configurable inputs/output	2 configurable inputs/outputs
Intelligent video		Motion detection Tampering alarm	Motion detection tampering alarm	Motion detection Audio detection Tampering alarm	Motion detection Audio detection Tampering Alarm	Motion detection Tampering alarm AXIS Camera Application Platform
Pan/tilt/zoom support		●	●	●	●	●
Security		Multi-level passwords IP filtering HTTPS encryption IEEE 802.1X				
Network		IPv4/v6, QoS				
Power		DC, PoE IEEE 802.3af Class 3	DC	DC, PoE IEEE 802.3af Class 3	DC	DC
Serial connectors		RS-422/RS-485	RS-422/RS-485	RS-422/RS-485	RS	RS-485
Other		Memory card slot, Quad-view, AVHS <sup>(1)</sup> , ONVIF	4X Memory card slots Quad-view, AVHS <sup>(1)</sup> , ONVIF	Memory card slot, Quad-view, AVHS <sup>(1)</sup> , ONVIF	4X Memory card slots Quad-view, AVHS <sup>(1)</sup> , ONVIF	AVHS <sup>(1)</sup> , ONVIF
Axis Part #		0414-004	0541-004	0416-004	0542-004	0289-001

(1) AVHS - AXIS Video Hosting System with One-Click Connection



### Technical guide to network video

Before setting up your own system, you need to consider what features are required. It is equally important to consider factors such as performance, interoperability, scalability, flexibility and future-proof functionality. This guide will walk you through these factors, helping you to achieve a solution that fully takes advantage of the potential of network video technology. To order a free personal copy, visit [www.axis.com/free\\_guide](http://www.axis.com/free_guide)

## Rack Solutions

Designed for high-density installations, Axis video encoder rack solutions accommodate multiple video encoder blades in the same rack.

			
Number of slots	3	14	14
Blades supported	AXIS Q7406, AXIS Q7414, AXIS P7224	AXIS Q7406, AXIS Q7414, AXIS P7224	AXIS Q7406, AXIS Q7414, AXIS P7224
Maximum number of channels	18	84	84
Rack size	1U	4U	5U
Rack width	19"	19"	19"
Built-in power supply	Power supply	Two redundant power supplies	Two redundant power supplies
Network	One Ethernet 10BASE-T/100BASE-TX (Gigabit Ethernet) port	Four Ethernet 10BASE-T/100BASE-TX/1000BASE-T (Gigabit Ethernet) ports	Four Ethernet 10BASE-T/100BASE-TX/1000BASE-T (Gigabit Ethernet) ports
Axis Part #	0267-004	0287-004	0575-004

For more information, visit [www.axis.com/products/video/video\\_server/](http://www.axis.com/products/video/video_server/)

## Axis product naming structure

Below is a quick guide to Axis product naming structure, which gives useful shorthand information on the product and product features

### AXIS P3367-VE



Series name = **AXIS P33**

## Axis network camera accessories

## Fixed network camera housings

Axis offers convenient and tailor-made solutions for mounting Axis network cameras outdoors and within harsh, humid and dusty environments. To find the right housing for fixed network cameras, visit [www.axis.com/products/cam\\_housing/fixed\\_housings\\_us.htm](http://www.axis.com/products/cam_housing/fixed_housings_us.htm). For dome network cameras, the correct housings can be found at [www.axis.com/products/cam\\_housing/dome\\_housings\\_us.htm](http://www.axis.com/products/cam_housing/dome_housings_us.htm)

## Cabinets and Enclosures

Axis Part #	Product	Compatible with:
5021-101	AXIS T91A10 Enclosure	AXIS P7701, AXIS P8221, AXIS Q7401
5900-151	AXIS T98A15-VE Surveillance Cabinet	Standalone
5900-161	AXIS T98A16-VE Surveillance Cabinet	AXIS M11-E, AXIS P13-E, AXIS Q16-E, AXIS Q17-E, AXIS Q19-E
5900-171	AXIS T98A17-VE Surveillance Cabinet	AXIS P33-VE
5900-181	AXIS T98A18-VE Surveillance Cabinet	AXIS P33/M32 Series with pendant kit, AXIS T91A61 Wall Bracket, supporting AXIS Q60 and AXIS P55

## Casings and Covers

Axis Part #	Product	Compatible with:
5503-141	Black casing with clear transparent cover	AXIS P3353, AXIS P3354, AXIS P3363-V, AXIS P3364-V
5503-151	Black casing with clear transparent cover	AXIS P3346, AXIS P3346-V, AXIS P3367-V, AXIS P3364-V
5503-191	Black casing with smoked dome	AXIS M203-V, AXIS M204-V, AXIS P301-V, AXIS P304-V
5500-821	Black casing with clear transparent cover	AXIS M203, AXIS M204, AXIS P301
5005-011 <sup>(a)</sup> 5005-001 <sup>(a)</sup>	Casing with transparent cover Clear <sup>(a)</sup> /Smoked <sup>(a)</sup>	Drop ceiling mount kit with transparent cover
5005-041 <sup>(a)</sup>	Clear <sup>(a)</sup> /Smoked <sup>(a)</sup>	Vandal-resistant casing with transparent cover
5005-051 <sup>(a)</sup> 5005-061 <sup>(a)</sup>	Clear <sup>(a)</sup> /Smoked <sup>(a)</sup>	Colored casing with clear transparent cover - 10 pack Black <sup>(a)</sup> /Silver <sup>(a)</sup> /Gold <sup>(a)</sup> /Mix of colors <sup>(a)</sup>
5502-181 <sup>(a)</sup> 5502-191 <sup>(a)</sup> 5502-201 <sup>(a)</sup> 5502-341 <sup>(a)</sup>	Covers (skins) 10 pack White <sup>(a)</sup> /Black <sup>(a)</sup>	AXIS M3004-V, AXIS M3005-V

## Media Converters

Axis Part #	Product	Compatible with:
5026-401	AXIS T8640 Ethernet over Coax Adaptor PoE+	Supports Axis Network Video Products
5027-421	AXIS T8641 Ethernet over Coax Base PoE+	Supports Axis Network Video Products
5028-411	AXIS T8642 Ethernet over Coax Device PoE+	Supports Axis Network Video Products
5029-034	AXIS T8603 P557	Power supply for AXIS T8640 Ethernet over Coax Adaptor PoE+
5025-281	AXIS T8129 PoE Extender	
5027-041	AXIS T8604 Media Converter Switch	
5028-051	AXIS T8605 Media Converter Switch	

## Mounting Accessories

Axis Part #	Product	Compatible with:
0217-031	VT Wall Bracket Internal Cable WB0VA1	AXIS T92A10/T92A20
0217-101	VT Corner Mount WCWA	
0217-081	VT Pole Mount Adapter WSFPA	
0217-051	VT Wall Bracket Adapter Plate WCPA	
5026-411	AXIS T8640 Wall Mount Bracket	AXIS T8640 Ethernet over Coax Adaptor PoE+
5017-041	AXIS T91A04 Camera Holder _ " NPS	AXIS M11 Series, M3004-V, M3005-V, AXIS M3006-V, AXIS M3007-P, AXIS M3007-PV, AXIS M50 Series, AXIS M31-VE Nocar, AXIS Q16 Series, AXIS P13 Series, AXIS Q17 Series, AXIS T91A63 Ceiling Bracket, AXIS T91A62 Parapet Mount, AXIS T91A61 Wall Bracket
5017-051	AXIS T91A05 Camera Holder 1.5" NPS	AXIS M11 Series, M3004-V, M3005-V, AXIS M3006-V, AXIS M3007-P, AXIS M3007-PV, AXIS M50 Series, AXIS M31-VE Nocar, AXIS Q16 Series, AXIS P13 Series, AXIS Q17 Series, AXIS T91A63 Ceiling Bracket, AXIS T91A62 Parapet Mount, AXIS T91A61 Wall Bracket
5026-421	AXIS T8640 Rack Mount Bracket	AXIS T8640 Ethernet over Coax Adaptor PoE+
5017-611	AXIS T91A61 Wall Bracket <sup>(1)</sup> Includes mounting plate - White	
5017-641	AXIS T91A64 Corner Bracket	
5017-671	AXIS T91A67 Pole Bracket <sup>(1,2)</sup>	AXIS 216FD Pendant Kit, AXIS P33 Series Pendant Kit, AXIS P33-VE Series Pendant Kit, AXIS P532, AXIS P532-E, AXIS P534, AXIS P534-E, AXIS Q6032-E, AXIS Q6034, AXIS Q6034-E
5017-631	AXIS T91A63 Ceiling Bracket <sup>(1)</sup>	
5017-621	AXIS T91A62 Parapet Mount <sup>(1)</sup>	
5502-021 <sup>(a)</sup> 5502-011 <sup>(a)</sup>	AXIS 216FD Pendant Kit White <sup>(a)</sup> /Black <sup>(a)</sup>	AXIS M32 Series, AXIS P301, AXIS P301-V, AXIS P33041, AXIS P3304-V
5502-351	AXIS P33 Series Pendant Kit	AXIS P33 Series
5502-321	AXIS P33-VE Series Pendant Kit	AXIS P33-VE Series
5502-431	AXIS Q6032-E Pendant Kit	AXIS P55 Series, AXIS Q60 Series <i>Already included with most T91A Brackets. Only needed to mount with non-T91A Brackets</i>
5502-911 <sup>(a)</sup> 5504-531 <sup>(a)</sup>	AXIS T94B01S Mnt Bracket 10 pcs White <sup>(a)</sup> /Black <sup>(a)</sup>	AXIS M3004-V, AXIS M3005-V (Network Cable Coupler included)
5504-701 <sup>(a)</sup> 5504-581 <sup>(a)</sup>	AXIS T91A47 Pole Mount 60-110mm <sup>(a)</sup> , 110-400mm <sup>(a)</sup>	AXIS M11-E, AXIS P13-E, AXIS Q16-E, AXIS Q17-E/-E, AXIS M30-V/-P/-PV/-LVE/-VE, AXIS P33-VE, AXIS T92, AXIS T93
5504-501	AXIS T91A50 Telescopic Ceiling Mount	Compatible w/all AXIS Pendant Kits 1.5"NPT and T91A05
5504-511	AXIS T91A51 Ceiling Mount	Compatible w/all AXIS Pendant Kits 1.5"NPT and T91A05
5503-811	AXIS T94F01D Pendant Kit	AXIS M30 Series Indoor Pendant Kit (Network Coupler included)
5900-021	AXIS T94F02D Pendant Kit	AXIS M30 Series Outdoor Pendant Kit for use with T91A brackets or 1.5"NPT threaded pipes

Not sure which accessory you may need? Use our Accessory Selector Tool in selecting compatible accessories for your cameras. Visit [www.axis.com/products/video/accessories/configurator](http://www.axis.com/products/video/accessories/configurator) to start choosing your accessories.

Notations (a) and (b) refer to the corresponding product models for the column; (1) AXIS Q6032-E Pendant Kit included; (2) Requires mounting tool (21778) For more information, visit [www.axis.com/products/video/accessories](http://www.axis.com/products/video/accessories)

Accessories

<p><b>Illuminators</b></p>  <p>White light and infrared illuminators for indoor/outdoor surveillance in low light or complete darkness. Fixed dome IR-LEDs for outdoor versions of AXIS P33 Series. For more information visit <a href="http://www.axis.com/products/cam_filters/index.htm">www.axis.com/products/cam_filters/index.htm</a></p>	<p><b>Power over Ethernet Midspans and Splitters</b></p>  <p>Axis Power over Ethernet (PoE) and High PoE midspans and splitters offer an easy, cost-effective solution for powering network video products without the need for power outlets and electrical cabling.</p>																		
<p><b>Power over Ethernet Midspans</b></p>	<table border="1"> <thead> <tr> <th>Axis Pt. #</th> <th>Axis Pt. #</th> </tr> </thead> <tbody> <tr> <td>AXIS TB120 1-port (15 W)</td> <td>5026-204</td> </tr> <tr> <td>AXIS TB122 (30 W)</td> <td>5023-121</td> </tr> <tr> <td>AXIS TB123 High PoE 1-port (30 W)</td> <td>5014-204</td> </tr> <tr> <td>AXIS TB123-E Outdoor (30 W)</td> <td>5030-234</td> </tr> <tr> <td>AXIS TB124 High PoE 1-port (60 W)</td> <td>5700-401</td> </tr> <tr> <td>AXIS TB124-E Outdoor (60 W)</td> <td>5031-244</td> </tr> <tr> <td>8-port</td> <td>5012-004</td> </tr> <tr> <td>16-port</td> <td>5012-014</td> </tr> </tbody> </table>	Axis Pt. #	Axis Pt. #	AXIS TB120 1-port (15 W)	5026-204	AXIS TB122 (30 W)	5023-121	AXIS TB123 High PoE 1-port (30 W)	5014-204	AXIS TB123-E Outdoor (30 W)	5030-234	AXIS TB124 High PoE 1-port (60 W)	5700-401	AXIS TB124-E Outdoor (60 W)	5031-244	8-port	5012-004	16-port	5012-014
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<p><b>Power over Ethernet Active Splitters</b></p>	<table border="1"> <tbody> <tr> <td>AXIS PoE Active Splitter 5V</td> <td>5008-001</td> </tr> <tr> <td>AXIS TB126 High PoE 12V</td> <td>5014-501</td> </tr> <tr> <td>AXIS TB128 High PoE 24V</td> <td>5014-511</td> </tr> </tbody> </table>	AXIS PoE Active Splitter 5V	5008-001	AXIS TB126 High PoE 12V	5014-501	AXIS TB128 High PoE 24V	5014-511												
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<p><b>AXIS T83 Microphones</b></p> 	<p>AXIS T83 Microphones are compact and discreet with high-performance in all scenarios. They are compatible with Axis network video products and offer great detail and resolution. They are suitable for indoor installation in both large and restricted areas.</p> <table border="1"> <thead> <tr> <th>Axis Pt. #</th> <th>Axis Pt. #</th> </tr> </thead> <tbody> <tr> <td>AXIS TB353A Microphone 3.5mm</td> <td>5032-531</td> </tr> <tr> <td>AXIS TB353B Microphone Phantom Power</td> <td>5033-541</td> </tr> </tbody> </table>	Axis Pt. #	Axis Pt. #	AXIS TB353A Microphone 3.5mm	5032-531	AXIS TB353B Microphone Phantom Power	5033-541												
Axis Pt. #	Axis Pt. #																		
AXIS TB353A Microphone 3.5mm	5032-531																		
AXIS TB353B Microphone Phantom Power	5033-541																		

Video management software

AXIS Camera Station	Axis Pt. # / eLicense Pt. #
AXIS Camera Station is a complete monitoring and recording system that is perfect for small- to mid-sized installations. It offers easy installation and setup with automatic camera discovery, a powerful Configuration Wizard and efficient management of the Axis network video products in the system.	0202-004 / 0202-601
10-camera base license	0202-054 / 0202-600
4-camera base license	0202-264 / 0202-607
20-camera add on license	0202-014 / 0202-603
5-camera add on license	0202-034 / 0202-602
1-camera add on license	0202-024 / 0202-604
1-year software upgrade	

**AXIS Camera Management**

Powerful and efficient installation and management tool for Axis network video products.  
For a free download, visit [www.axis.com/products/cam\\_mgmt\\_software](http://www.axis.com/products/cam_mgmt_software)

AXIS Application Development Partners
A wide variety of software solutions for video surveillance, remote monitoring or broadcasting are available from more than 800 Axis Application Development Partners.
<b>AXIS Video Hosting System</b>
AXIS Video Hosting System (AVHS) enables a hosted monitoring and recording service to be managed and distributed to you by a service provider. With an Internet connection and an Axis camera as the only requirements, you can enjoy a trouble-free monitoring solution over the Internet. For more information visit <a href="http://www.axis.com/hosting/">www.axis.com/hosting/</a>
<b>AXIS Camera Station One</b>
Software solution for viewing and recording live video from a single Axis network camera. Available for free download. For more information, visit <a href="http://www.axis.com/products/video/software/">www.axis.com/products/video/software/</a>
<b>AXIS Camera Companion</b>
AXIS Camera Companion is the market's easiest video surveillance solution. Perfect for small systems, it offers future-proof IP advantages such as HDTV image quality. With AXIS Camera Companion, all video is recorded on SD cards in the cameras, and no DVR or server is necessary. For more information, visit <a href="http://www.axis.com/products/cam_companion_software">www.axis.com/products/cam_companion_software</a>

Axis Certification Program



Take the challenge! Showcase your expertise in network video with the global standard for individual certification from Axis. Register for the Axis Certification Program – then pass our advanced-level test to become an Axis Certified Professional.

Axis offers both online and classroom-based training to help you acquire the knowledge needed to pass the exam. Go to [www.axis.com/certification](http://www.axis.com/certification) to find our online learning center and for more information on how to register.

Technical Services



Axis stays with you all the way.

At Axis, we help our partners and end customers find solutions. Start with our support web at [www.axis.com/support](http://www.axis.com/support) for your product questions. With more than 400 FAQs in our extensive database, you are sure to find the product details you need. You can also submit advanced queries related to your Axis solution using the Online Helpdesk.

Intelligent Video is about reducing the vast amount of information contained in video, making it more manageable for systems and persons. Building this sort of analytics into network cameras has major advantages, such as a more reliable and versatile video surveillance system, and drastically reduced workload for the staff. Additionally, intelligent video systems can extract video and data from surveillance video streams and integrate that information with other applications, creating new benefits and opening up new business possibilities.

For more information in intelligent video, visit [www.axis.com/products/video/about\\_networkvideo/iv/](http://www.axis.com/products/video/about_networkvideo/iv/)



<p><b>Active Tampering Alarm</b></p> <p>The Active Tampering Alarm functionality enables the detection of disrupted camera operation by automatically alerting the operator when a camera is manipulated in any way.</p>	<p><b>Audio Detection</b></p> <p>This application detects noise – such as the breaking of a window or voices – and uses this as a trigger to transmit and record video, or to alert operators of suspicious activities. Please note that local legislation or codes of practice sometimes limits the use of this feature.</p>	<p><b>Autotracking</b></p> <p>Axis' autotracking enables a PTZ dome camera to automatically follow a moving object in a scene. This ensures that when an incident occurs, the right part of the scene is recorded with enough image quality to enable identification.</p>
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<p><b>AXIS Cross Line Detection</b></p> <p>AXIS Cross Line Detection is especially suitable for general monitoring of entrance and exit points in low-traffic areas, detecting objects such as persons and vehicles that cross a defined virtual line.</p> <p>For more information, visit <a href="http://www.axis.com/products/crossline/">www.axis.com/products/crossline/</a></p>	<p><b>AXIS Video Motion Detection 2.1</b></p> <p>AXIS Video Motion Detection 2.1 is an application specially suitable for motion detection for indoor or outdoor installations with low traffic areas. The application integrates with the camera's internal event manager, enabling various system notifications.</p> <p>For more information, visit <a href="http://www.axis.com/products/video/motion_detection/">www.axis.com/products/video/motion_detection/</a></p>	<p><b>Gatekeeper</b></p> <p>Gatekeeper zooms in on an object as it enters the center of the image, then zooms out after a pre-set of seconds.</p> <p>Advanced Gatekeeper offers the same feature but the object does not have to be in the center of the image.</p> <p>Active Gatekeeper includes tracking when the object moves.</p>
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## Axis innovates

As the world leader in network video, Axis is constantly working to provide advanced technology for our network cameras. Our research and development efforts have resulted in the following technologies, which have enhanced our cameras' capabilities.

**Corridor Format**

Corridor Format allows you to get a vertically oriented, "portrait"-shaped video stream, which maximizes image quality while eliminating bandwidth and storage waste.

**Lightfinder Technology**

The advantages of the Lightfinder technology are high light sensitivity, excellent image quality with low noise but a wealth of details, and better color reproduction in low light.

**Wide Dynamic Range**

Wide dynamic range is a feature in some Axis network cameras that incorporates techniques for handling a wide range of lighting conditions in a scene.

## G-SIM

### GEUTEBRÜCK Security Information Management



#### Product information

The GEUTEBRÜCK Security Information Management (G-SIM) is fully scalable from the smallest single-NVR installation (the Small Business Edition) through the Business Edition to a full Enterprise system. What makes this possible is the architecture which was designed from the ground up to be scalable and to allow unprecedented power: a single server can run thousands of cameras. In fact, at one of our larger installations we run more than 5,500 cameras per server.

- | Complete flexibility for any number of networked workstations
- | Intuitive operation using individually designed site-plan-based operator interfaces
- | Complete video stream management for live and recorded video
- | Efficient alarm management with site plans, video and all other relevant information
- | Comprehensive support for delegation, i.e. for the hand-over of event or alarm processing, the allocation of tasks and for switching internal system communication between users
- | Perfect data protection as a result of the flexible administration of user rights and the complete audit trail
- | Management of all subcontractors and third party systems integrated into the GEUTEBRÜCK system

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## ***Intuitive and User Friendly Interface***

G-SIM was built for users. An easily customisable, flexible interface allows the user to select a screen layout and place camera viewers, guard tours, maps and item lists in any of the layout windows. Drag-and-drop functionality of all items as well as alternative keyboard control makes navigation a breeze. Consistent and intuitive system handling of items and functionality makes it easy to use, even for newcomers who are used to working with GUI-based programs.

### ***Multiple screen support***

Up to four screens are supported per workstation.

### ***Different font sizes***

We support different font sizes, allowing easier viewing on small, high-definition screens, or distant screens.

### ***User selection of screen templates for each individual screen***

Users may choose from a selection of pre-defined screen templates. Administrators may define new templates. Cameras, guard tours, maps and lists may be docked or duplicated in any window of such a template.

### ***Saving of favourite screen layouts***

Users may save screen layouts containing any screen components. These can be recalled quickly for performing common task.

Note that zoom levels and positions of maps and video, are included.

### ***Drag-and-drop support***

The user interface has been designed to be highly intuitive to use. Drag-and-drop support wherever possible, makes the interface fast and easy to use. Drag a camera to a map to show its position, drag it to an empty viewer to view it, drag it to a list to select it, drag it to a task to assign a camera-related task, etc.

### ***Easy access to all video network related items through lists***

Tabbed lists of sites, cameras, users, etc., make it easy to access items. Simple queries allow filtering to focus on specific items according to various criteria. Status icons in these lists give a quick overview of usage, alarm conditions, etc.

### ***Real-time update of system usage through status icons***

Status icons show information about an item. For example, in the camera list icons show which cameras are viewed by you, by other users, or are used in guard tours. These icons are updated in real time as usage and alarm conditions change, providing a quick overview of the system state.

### ***Focused access to the important information***

Most of the lists have easy-to-use filters to help the user focus on what is important. These filters allow you to see only selected groups or types of items. Filters even allow dynamic display of items which are currently being used in a specific way – such as all PTZ cameras that are being controlled on a specific group of sites; or all Alarms of a selected type that have been handled by a certain operator during, say, the last 2 weeks.

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## ***Live Cameras and Recorded Footage***

All standard camera viewing, reviewing and control functionality is available and easy to use. It is not necessary for the user to know about NVRs, how cameras are connected, or where the footage is stored. Users simply get a camera and drag it onto a viewer or map to use it. Cameras can be taken from the camera list, other maps, alarms, the list of who is using which camera, etc. Tasks and audit items can also have cameras attached to them for immediate access.

### ***Viewing of live cameras and reviewing recorded footage***

View a camera in any of the screen layout windows, move it to another position or to one of the other screens, show it full-screen or perform specific tasks with it, such as adding it to a Guard Tour (Camera Sequence), finding it on a map, creating a Video Event, etc.

### ***Clone the selected camera view for reviewing***

Easily open a review session of the same camera while viewing it live (or vice versa).

### ***Controlling live cameras and managing who has control***

Control PTZ cameras by using keyboard shortcuts, the mouse (by dragging the focus-point of the camera around and zooming in/out with the mouse wheel), or an MBeg controller. G-SIM manages the control of such cameras when more than one person has the privilege to take control, by prioritising the users according to the pre-configured user levels. Any camera under control shows who is controlling it, and warns a user attempting to take over such control.

### ***User defined and centrally managed PTZ pre-sets***

PTZ pre-sets are easy to assign, making the recall of such pre-sets simple via a list in the Camera Detail display, or through a drop-down list on the Viewer window. These positions can be assigned human readable names, e.g. Cargo Bay Door. These positions can be used as they are virtual cameras.

### ***Use all GEUTEBRÜCK supported cameras***

All cameras supported in a GEUTEBRÜCK video network can be accessed. This includes IP/ high-definition cameras and even IP-based PTZ cameras.

### ***Pan and Zoom***

Mouse-wheel digital zoom allows magnification of high definition footage after which the image may be dragged to pan. Double-click the viewer for a full screen view if more detail is required.

### ***User blocking of cameras***

Users (with the correct rights) may temporarily block access to cameras or camera groups for viewing or use by other users/user groups.

### ***Guard Tours (timed camera sequences)***

Pre-defined and user definable Guard Tours may be comprised of any combination or number of cameras across the video network for sequenced camera monitoring. Any item in the sequence may also be a (managed) PTZ pre-set. The duration for which each camera is viewed (dwell time) may also be configured. These tours may be defined globally for use by all operators, or privately for personal use — displaying any number of tours in any of the viewers. The user can easily see which item in the sequence is being displayed and even jump to any other item instantly. Use of a Tour definition is per user, and they don't impact each other.

### ***Real-time camera usage information for all users***

G-SIM shows who is using any given camera at any given time. Camera-specific notifications such as sync loss are also displayed in real time.

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## ***Maps***

Maps give a quick overview of camera positions and current alarm conditions. Maps may be linked per site or camera grouping like web pages, with hot-spot navigation areas. This allows easy navigation between different floors of a building and different areas in the larger area(s) under surveillance.

### ***Easy location of any camera on a map***

The keyboard or drag-and-drop may be used to locate a camera quickly on an already open map, or a new map can automatically be opened in a selected viewer with the camera position indicated and the map zoomed correctly.

### ***Camera detail and viewing directly from map***

Camera detail, a reference frame and current usage information is displayed when right-clicking a camera on a map, and can be viewed by dragging it to a viewer.

### ***Linked maps can be of different types***

Network overview maps may be used for navigation to sites. Detail drill-down areas on maps (hot-links) allow branching to other maps. The interface is akin to browsers, with back and forward buttons allowing operators to page through recently viewed maps.

### ***Pan and Zoom***

All maps support panning and zooming using the mouse and mouse wheel.

### ***Viewer windows may contain maps***

Any number of maps (or different views of the same map) may be open at once. Maps may be displayed in any viewer window (unless the administrator constrains this), and may be moved to other viewers on other screens. Some screen templates have larger display areas ideal for maps. These templates are designed by the administrator.

### ***User defined map components***

Dynamic map components with custom graphics may be defined. When linked to cameras or specific alarm instances, they could attract attention by alternating colour, transparency, or form, or even display conditional graphical information.

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## ***Alarms and health events***

Alarm handling involves the acknowledgement of an alarm by a user who is then responsible for its completion. Each alarm type can have a customisable handling procedure (check-list) that must be completed before an alarm may be completed.

### ***Different alarm levels***

Three alarm levels (critical, non-critical, information) are defined by default, with unique colour coding and audible alarm notifications.

### ***Configurable alarm handling procedures***

Step-by-step alarm handling procedures may be defined for each type of alarm. These may be simple instructions, check-list items or Yes/No questions. G-SIM can link to external documentation for more involved procedures.

### ***Default video related alarms***

Certain defaults are pre-defined, such as sync loss alarms or movement triggered events.

### ***GeViScope alarms***

All intrinsic GeViScope alarms may be used directly. This includes video sync alarms, camera position authentication and input triggers. Examples of the latter are duress, help phone, seismic and tamper alarms.

### ***Complex alarms generated by GeViScope / GeViSoft***

Any events or custom actions can be configured to generate alarms after being pre-processed by GeViScope or GeViSoft. Such

alarms may be generated in addition to the behaviour configured within the recording NVR or within GeViSoft. Even dual-sensor alarms are supported.

### ***Specialised derived and other video network alarms***

These alarms are derived from a number of different conditions or from sources not directly related to video streams, but which impact them. Examples are intermittent camera, camera down, NVR failure, GeViRAID errors, configured SNMP alarms, integration from access control systems, etc.

### ***Customer-specific alarms***

The plug-in alarm architecture of G-SIM allows integration of any custom alarms.

### ***Easy viewing of alarm-related camera footage***

Footage relating to an alarm can be viewed by dragging the alarm onto a viewer.

### ***Linking multiple cameras and even a map to an alarm***

Multiple cameras may be linked to a specific alarm instance, which will then be displayed when the alarm is reviewed (or automatically displayed). The alarm could optionally be configured to show a context-map as well.

### ***Review of an alarm***

Pending, new, or completed alarms may be reviewed in the AlarmView screen. Alarm detail, linked cameras in paused and/or replay/live state, and an optional map automatically showing the map-view focused on the linked cameras are also available.

### ***Alarm auto-display***

When one or more new alarms are received at a console, they can automatically be displayed (cued) for the operator to handle. The layout of the linked cameras (and map) can be changed per such alarm. This should clearly be done only for the most critical alarms.

### ***Uncompleted alarms may be transferred to other users***

A user may pass an alarm on to another user for completion. This allows subject matter experts to deal further with an alarm that an operator is not qualified to handle.

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## ***Video Events***

Users may tag video on-the-fly for later review or to be used in the compilation of evidence packs. This is as simple as pressing a single key to indicate the event type (theft, accident, ...), which is then used later to collate the required footage into evidence packs.

### ***Events from multiple cameras may be grouped together***

A video event may be a single event that requires further investigation, or it may be a group of several events from any number of cameras over time.

### ***Effortless tagging of events during surveillance operation***

An operator may tag a video event using keyboard shortcuts (or function buttons) without necessarily having to type any additional information. Such an event can easily be reviewed and completed at a later stage when evidence packs are being compiled.

### ***Easy export of video in the form of evidence packs***

Evidence packs may be exported as tamper-proof GscView Cut-Lists or MPEG via the standard export window.

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## ***User Rights, Restrictions, and Licensing***

Centrally managed licensing coupled with user rights and restrictions to control access to all functionality.

### ***Central system license management***

G-SIM's flexible licensing allows flexible functionality and pricing.

### ***Central user and rights management***

All users and their rights are centrally managed from the management console.

### ***Secure user log-ins***

All rights and restrictions to parts of the system are controlled by the .NET security manager using encrypted server requests. Users may use their Windows log-in for authentication, if required.

### ***All functionality available to a user is controlled***

System sections, buttons and display fields are only visible if a user has the necessary rights. Doing this in a group context makes for easy and safe updates when required.

### ***Real-time updates of permissions changes***

User consoles are updated to reflect new permissions settings immediately after transmission from the management console. No logging out & back in required.

### **Functionality may be “locked” to a specified operator console**

Restrictions may be configured for a specific workstation, so that only specified functions are available for any user when using than console. This is configured centrally. This is especially useful for workstations at insecure locations, e.g. in a building reception foyer.

### **Control over who may use specific sites, cameras & camera groups**

Users, user groups, or consoles may be restricted to have access to (or use) only certain cameras, camera groups, or even sites. The flexible licensing structure could greatly reduce the cost of implementation if many of the Operator Consoles are restricted to access only a local site, or a few sites. This is important if bandwidth is expensive (some of our customers runs over ISDN lines), or certain sites require higher security clearance to view.

### **Control who may receive specific alarms**

Users, user groups or consoles may be restricted to receive only certain Alarms or Alarm Types.

### **User hierarchy**

The differential rights and restrictions allow a user hierarchy to be defined. One very important point where this comes into play is with PTZ control — allowing an administrator to take over control of a PTZ even if an operator is controlling it at the time.

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## **Audit Logging and Usage Tracking**

System usage and set-up changes are logged in the central database and may be queried via the Audit Log section of the user interface. There is no other access to this log.

### **Detailed logging of all set-up changes**

Summaries of all configuration changes made in the management console are logged, including who made the changes.

### **Detailed logging of all user actions**

All user actions are logged, including inter alia all messages sent, cameras viewed, actions taken, how alarms were completed, etc.

### **Playback of user actions**

All logged viewing and reviewing actions may be played back. Viewed cameras may easily be located on maps.

### **Filtering and querying of audit data**

We have a powerful query builder which may be used to query the audit log. No SQL knowledge is required, as the interface is entirely graphical. The output may be printed, emailed, and exported to various formats including CSV, Excel, PDF, and others.

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## **Health Monitoring**

Health agents on remote computers and NVRs gather computer, camera and network health information that not only provides an overview of current system health, but also store historic health data — for example to see a camera’s sync loss profile over time.

### **Dashboard showing network-wide health status**

The current state of all G-SIM related software, site connections, and NVR storage systems are displayed for a quick overview of current status. More involved reports (including SNMP integrations) are simple to generate via the query builder, and are thus not displayed on the health overview screen.

### **Camera related health information**

Sync loss, camera down, and CPA events are monitored.

### **Common metrics**

- | NVR related health information
- | Storage related health information
- | UPS related health information
- | SNMP traps can be accepted, opening up massive monitoring possibilities

### **Health alarms**

Additional alarms may be generated as a result of thresholds on any monitored items being exceeded.

### **G-SIM system component monitoring and centralised automated updates**

All G-SIM components on the various computers are monitored and checked for consistency, with out-of-date components indicated on the Dashboard.

### **User feedback on Site List**

Unhealthy sites are marked on the site list. This includes partial failures, allowing pre-emptive correction.

### **Health reporting**

Summarised reports on health status may be generated at any time.

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## Remote Viewer Control, Unmanned Consoles, and Video Walls

Pre-configured users may control what others are viewing, and may send content to Unmanned Consoles (e.g. in a foyer). The same holds for video walls, which are similarly easy to control.

### Unmanned Console configuration

Such a workstation (usually with only the screens publicly visible) is configured to start up an unattended version of G-SIM when it boots up. The initial layout and content is configured, so no user intervention is required. Such consoles can be configured as remote display monitors throughout your installation to display any combination of maps, live or pre-recorded video, guard tours, or even external video feeds e.g. news or stock reports.

### Sending viewer content to other users

Users may quickly send the contents of a local viewer to any other logged-in user's screen. The rights both for sending content to other users as well as the receiving of content may be assigned to, or blocked, for any user or work station. The latter is important to allow only some users to put video on a video wall, for example.

### Sending content to Unmanned Consoles

Any user with the correct privilege can send content such as live or paused video footage to an Unmanned Console, or even replay cued footage, send camera sequences or maps.

### Groups of Unmanned Consoles

Any number of such consoles may be grouped. Groups can then be updated simultaneous or individually. Groups may optionally be configured as synchronised, which limits the updating to the whole group at once only — ensuring that the contents of such synchronised consoles always remain the same.

### Changing the screen layout of Unmanned Consoles

The number of viewers in a screen and the layout of each screen may be changed remotely to any of a number of pre-configured layouts.

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## Redundancy Options

G-SIM has a range of options available to support corporate and enterprise customers. While we do support various flavours of commercial fail-over (from modular servers to data base clustering), we have developed our own redundancy and associated fail-over. This allows an unplanned server fail-over to take less than one second, with no discernible user impact. For all of our redundancy models, operators need not have any knowledge of either the fact that fail-over occurred, nor where to find footage (if recorded onto another NVR than default) G-SIM deals transparently with all of that.

### Server redundancy

This can either be with or without load distribution. Load distribution is when normal operations are spread across multiple servers, with a server failure causing its load to be taken up by another server. More often, redundancy is on a hot stand-by basis, where one server gets all necessary state updates, and is ready to step in at a moment's notice.

### NVR redundancy

We have a number of models which relate to how the NVR channels are mapped for fail-over:

- | **1:1 redundancy** is when every NVR has a "shadow" NVR to which it fails over
- | **Many: 1 redundancy** is when one "shadow" NVR is used as target for more than one operational NVR. Clearly no more than one NVR in a group linked to a single shadow can be in fail-over at a time.
- | **Channel redundancy** is when individual channels of an NVR are mapped to different target NVRs. These target NVRs could be "live", and only keep a few channels open for fail-over. This is the method which reduces risk the most, and utilises equipment the best.

### Camera redundancy

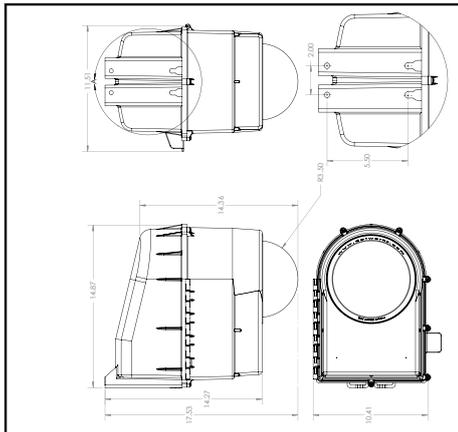
This is a special case for extremely high security installations, where there are two complete sets of infrastructure, and two cameras view the same scene.

**D3-CD: Dotworkz D3 COOLDOME™ 12VDC Active Cooling Camera Enclosure**

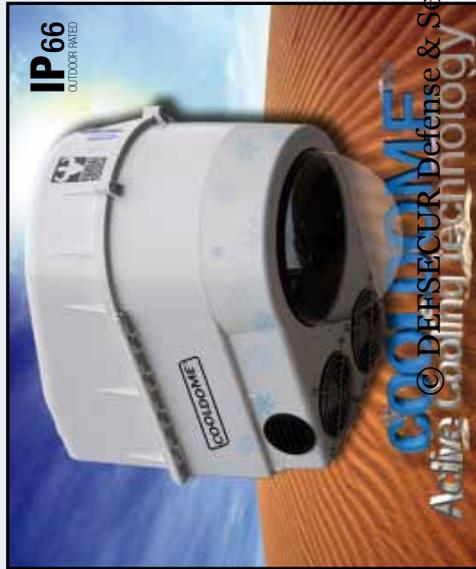
**Built to Stay Cool when the Weather is Beyond Hot**

The Dotworkz COOLDOME™ Active Cooling technology offers the most advanced outdoor camera protection system available, and has been designed to protect both IP and Analog cameras from extreme heat and direct sunlight.

The COOLDOME™ is engineered for climates where heat damage can occur. It is IP66 rated: airtight and sealed against outside air, dust, water and salt water, and integrated IP68 waterproof cable ports. Internal mounting space designed for routers, cell networks, hard drives, UPS, WiMax, mesh hardware and more.



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**Features:**

- COOLDOME™ Thermostatically controlled Active Cooling technology
- Up to 158° F (70° C) protection - up to a 45° F (25° C) differential with the outside
- IP, CCTV, HD and analog PTZ camera compatible for almost all sizes and brands
- Active solid state COOLDOME™ Thermo-Electric Cooling System providing up to 45° F Differential protects sensitive electronics in hot climates
- Internal Thermo-blanket permits sensitive electronics to be mounted in direct sunlight
- Internal bracket included for perfect fit for PTZ, megapixel or mini domes
- Switchable upper and lower camera mounting locations for maximum versatility and internal storage space utilization
- Internal mounting space for: routers, cell networks, NVR, hard drives, UPS, WiMAX, mesh hardware, etc
- IP66 rated: airtight and sealed against outside air, dust, water and salt water includes IP68 water proof connection ports

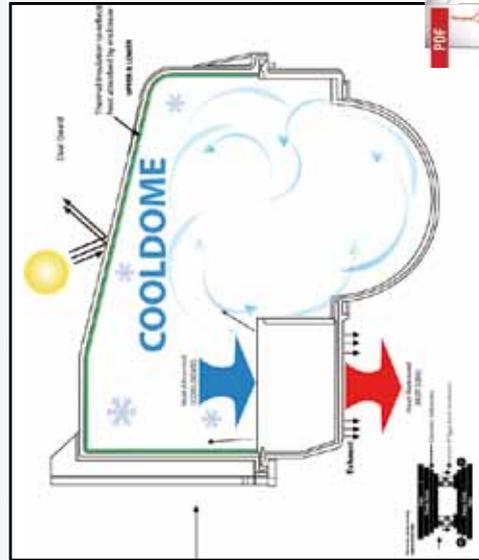
**Description:**

The Dotworkz D3 COOLDOME™ is the most advanced outdoor camera protection system available. Designed with active on-board & thermostatically controlled air conditioning, to protect both cameras and other system related hardware in one easy to install engineered form factor. The D3 is designed as Dotworkz complete outdoor solution housing for advanced camera system deployments in the world's hottest climates.

Dotworkz D3 has taken protection to the next level for climates where temperatures exceed 105° F (41° C) but reaches as high as 155° F (68° C). Engineered for climates where heat damage can occur.

**Specs:**

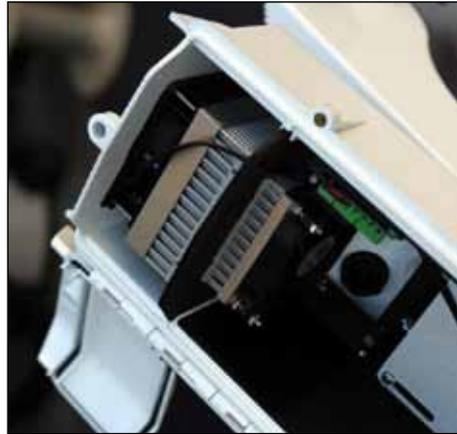
- Operating Temperature (Absolute/Rec.): -40° to 158°F (-40°C to 70°C)
- Power Consumption (without camera): 215 Watts @ 12 DC typical, both coolers engaged
- Input Power Source options: 12 VDC, 110 VAC, or 220 VAC
- Outputs for Camera Power: 12 VDC
- Internal Power Available for Camera: 3 amps @ 12 VDC on typical model
- HD or H.264 PTZ Camera Support: Yes
- Shipping: 22" x 13" x 16" 19 lbs (8.6 Kg)



## ST-CD: Dotworkz S-Type 12VDC COOLDOME™ Active Cooling Camera Enclosure

### Built to Stay Cool when the Weather is Beyond Hot

The Dotworkz COOLDOME™ Active Cooling technology offers the most advanced outdoor camera protection system available, and has been designed to protect both IP and Analog cameras from extreme heat and direct sunlight. The COOLDOME™ is engineered for climates where heat damage can occur. It is IP66 rated: airtight and sealed against outside air, dust, water and salt water, and integrated IP68 waterproof cable ports. Internal mounting space designed for routers, cell networks, hard drives, UPS, WiMax, mesh hardware and more.



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### Features:

- COOLDOME™ Thermostatically controlled Active Cooling technology
- Active solid state COOLDOME™ Thermo-Electric Cooling System providing up to 45° F Differential protects sensitive electronics in hot climates
- Maximum operating temperature up to 158° F (70° C)
- Virtually indestructible Polycarbonate Thermal Plastic alloy material
- IP, CCTV, HD and other brick-style long body cameras; compatible with most sizes and brands
- Integrated Dual Layer (Foil/Foam) internal thermo-blanket protects electronics from solar-heat and UV Rays to reduce solar-loading and protects from cold weather conditions, creating a stable internal camera environment
- Includes heavy-duty "Strong-Arm" mount, for quick and secure installation
- Vandal tough casing designed to protect valuable electronics from vandalism and theft
- Exceeds IP66 rating: airtight and sealed against outside air, dust, insects, water/salt water and other conditions
- Internal mounting space for IP hardware: routers, cell networks, NVR, hard drives, UPS, WiMax, mesh hardware, etc.

### Description:

The S-Type COOLDOME™ is the next generation of outdoor camera protection for traditional static/brick camera types and is engineered to protect all brands and camera models in tough, hot environments or where heat damage can occur.

The COOLDOME™ is designed with an active on-board & thermostatically controlled air conditioning, used to protect both cameras and other system related hardware by removing heat buildup from sensitive components.

The S-type COOLDOME™ is IP66 rated and, in addition to the active cooling technology, is air and water tight. The S-Type housing utilizes all the features of Dotworkz popular D-Series enclosures for a brick-style camera format. It is perfect for the deployment of temperature sensitive IP, CCTV, megapixel, HD or other long body cameras in the world's hottest climates.

### Specs:

Operating Temperature (Absolute/Rec.):

-40° to 158°F (-40°C to 70°C)

30° to 145°F (-1°C to 63°C)

Power Consumption (without camera):

9 amps @ 12 VDC typical at full load

Input Power Source Options:

12 VDC, 110V AC, or 220 VAC

Outputs for Camera Power:

12 VDC (24 VDC model also available)

Internal Power Available for Camera:

3 amps @ 12 VDC on typical model

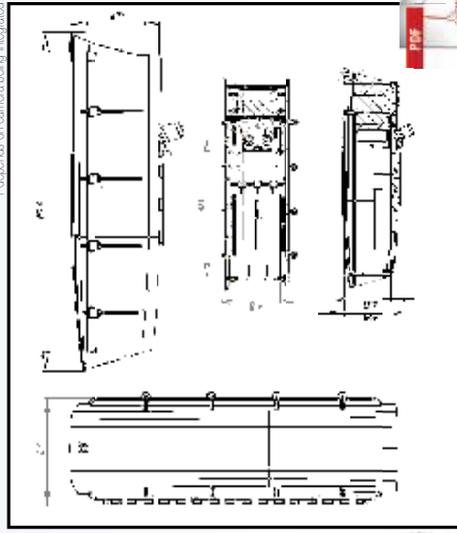
Shipping:

17" x 13" x 16"

15 lbs (6.8 kg)



1 depends on camera being installed



## AXIS 232D+ Network Dome Camera

For professional video surveillance applications.



- > 18x optical zoom with autofocus
- > Simultaneous MPEG-4 and Motion JPEG
- > Day/night functionality
- > Wide Dynamic Range
- > High precision PTZ control

AXIS 232D+ Network Dome Camera delivers superior quality MPEG-4 and Motion JPEG video in all light conditions. It is perfect for professional security installations at airports, railway stations and prisons, as well as at warehouses, manufacturing facilities, shipping centers and school campuses.



The camera's 18x optical and 12x digital zoom with autofocus provides powerful zoom capabilities to enable monitoring of distant objects in sharp detail.

Simultaneous MPEG-4 and Motion JPEG video streams allow for optimization of image quality and bandwidth efficiency.

With 128x Wide Dynamic Range (WDR), AXIS 232D+ ensures high-quality video even in complex lighting conditions.

AXIS 232D+ provides continuous 360-degree pan and supports 20 preset positions and guard tour. Fast, high precision PTZ control using mouse or joystick makes it easy to track objects of interest.

AXIS 232D+, with its automatic or manually removable IR-cut filter, can capture color video in light conditions down to 0.3 lux, and black and white video in conditions as low as 0.005 lux.

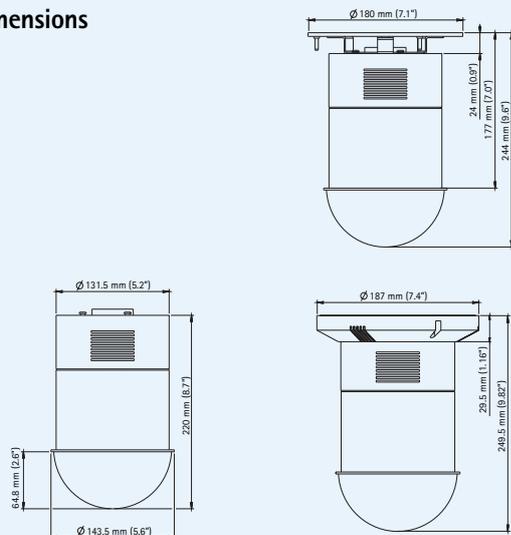
## Technical specifications – AXIS 232D+ Network Dome Camera

Camera	
<b>Models</b>	AXIS 232D+ 60 Hz AXIS 232D+ 50 Hz
<b>Image sensor</b>	1/4" Exview HAD CCD
<b>Lens</b>	f=4.1 – 73.8 mm, F1.4 – 3.0, autofocus, manual/automatic day/night Horizontal angle of view: 48° – 2.8°
<b>Minimum illumination</b>	Color: 0.3 lux at 30IRE F1.4 B/W: 0.005 lux at 30IRE F1.4
<b>Shutter time</b>	1/10000 s to 1 s
<b>Pan/Tilt/Zoom</b>	18x optical and 12x digital zoom, total 216x zoom Pan: 360° endless, 360°/s pan speed Tilt: 0° – 90° (± 3°), 360°/s tilt speed 20 preset positions Guard tour Supports Windows compatible joysticks
Video	
<b>Video compression</b>	MPEG-4 Part 2 (ISO/IEC 14496-2) Motion JPEG
<b>Resolutions</b>	704x480 to 176x120 (60 Hz) 704x576 to 176x144 (50 Hz)
<b>Frame rate MPEG-4</b>	Up to 30/25 fps (60/50 Hz) at 2CIF/CIF/QCIF
<b>Frame rate Motion JPEG</b>	Up to 30/25 fps (60/50 Hz) in all resolutions
<b>Video streaming</b>	Simultaneous MPEG-4 and Motion JPEG Controllable frame rate and bandwidth VBR/CBR MPEG-4
<b>Image settings</b>	WDR (Wide Dynamic Range), compression, brightness, sharpness, white balance, exposure control Text and image overlay De-interlacing

Network	
<b>Security</b>	Password protection, IP address filtering, HTTPS encryption, IEEE 802.1X network access control
<b>Supported protocols</b>	IPv4/v6, HTTP, HTTPS, QoS Layer 3 DiffServ, FTP, SMTP, Bonjour, UPnP, SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS
System integration	
<b>Application Programming Interface</b>	Open API for software integration, including VAPIX® from Axis Communications available at <a href="http://www.axis.com">www.axis.com</a>
<b>Intelligent video</b>	Video motion detection
<b>Alarm triggers</b>	Intelligent video and external input
<b>Alarm events</b>	File upload via FTP, HTTP and email Notification via email, HTTP and TCP External output activation
<b>Video buffer</b>	9 MB pre- and post alarm
General	
<b>Processors and memory</b>	ETRAX 100 LX, ARTPEC-2, 32MB RAM, 8MB Flash
<b>Power</b>	24 – 36 V DC, max 28 W 19 – 28 V AC, max 25 VA
<b>Connectors</b>	RJ-45 Ethernet 10BASE-T/100BASE-TX PoE, Terminal block for 4 alarm inputs and 4 outputs
<b>Operating conditions</b>	5 – 50 °C (41 – 122 °F) Humidity 20 – 80% RH (non-condensing)
<b>Approvals</b>	EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3, FCC Part 15 Subpart B Class A, VCCI Class A, ICES-003 Class A, C-tick AS/NZS CISPR 22 Class A, EN 60065 Power supply: EN 60950-1, UL, CSA
<b>Weight</b>	1.8 kg (4.0 lb)
<b>Included accessories</b>	Power supply, mounting brackets for hard and drop ceiling mount, smoked and transparent covers, Installation Guide, CD with installation tools, recording software and User's Manual, Windows decoder 1-user license

More information is available at [www.axis.com](http://www.axis.com)

### Dimensions



### Optional accessories

Various housings



Outdoor mains power adaptor



AXIS T8310  
Video Surveillance Control Board



AXIS T90A Illuminators



For information on AXIS Camera Station and video management software from Axis' Application Development Partners, see [www.axis.com/products/video/software/](http://www.axis.com/products/video/software/)

## AXIS M5013-V/M5014-V PTZ Dome Network Cameras

Vandal-resistant PTZ domes that give the big picture.



- > Pan, tilt, zoom in a vandal-resistant casing
- > HDTV 720p/SVGA and H.264
- > IP66- and IK10-rated
- > Power over Ethernet (IEEE 802.3af)
- > Indoor use

With their 360° surveillance, AXIS M50-V cameras can be used to create a safe and secure environment, identifying potential threats, and staying one step ahead of vandalism and crime.

The vandal-resistant AXIS M5013-V/M5014-V, mounted on a hard ceiling, enable flexible coverage over a 400 sq. m. (4300 sq. ft.) area, with a  $\pm 180^\circ$  pan,  $90^\circ$  tilt and 3x digital zoom. The cameras help to cost-effectively monitor train platforms and boarding areas and to manage one or more locations while improving security.

AXIS M5013-V provides full frame rate video in SVGA 800x600 resolution. AXIS M5014-V provides HDTV 720p which entails a 1280x720 resolution, progressive scan, HDTV color fidelity, full frame rate and a 16:9 format.

With an IP66 rating, the cameras are protected against the ingress of dust and high pressure water jets from any direction. AXIS M50-V also support IK10 rating for protection against impact and vandal acts. The installation is quick and easy thanks to one cable-installation with Power over Ethernet.

AXIS M50-V support multiple H.264 and Motion JPEG video streams. H.264 greatly optimizes bandwidth and storage use without compromising image quality. The memory card slot enables several days of recording on a SD card.



## Technical Specifications – AXIS M5013-V/M5014-V PTZ Dome Network Cameras

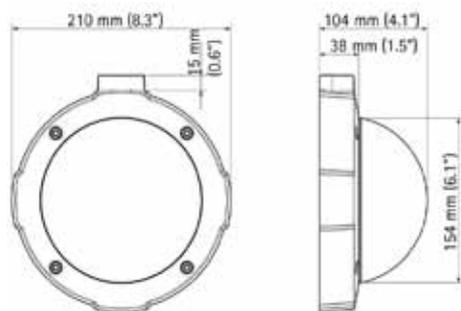
Camera	
<b>Image sensor</b>	1/4" progressive scan RGB CMOS
<b>Lens</b>	3.6 mm, F1.8 AXIS M5013-V: 45° horizontal angle of view AXIS M5014-V: 60° horizontal angle of view
<b>Minimum illumination</b>	1.4 lux, F1.8
<b>Shutter time</b>	1/25000 s to 1/6 s
<b>Pan/Tilt/Zoom</b>	25 preset positions; Pan: ±180°, 100°/s; Tilt: 90°, 100°/s Zoom: 3x digital zoom, total 216x zoom
Video	
<b>Video compression</b>	H.264 (MPEG-4 Part 10/AVC) Motion JPEG
<b>Resolutions</b>	AXIS M5013-V: SVGA 800x600 to 320x180 AXIS M5014-V: HDTV 720p 1280x720 to 320x180
<b>Frame rate</b>	H.264: 25/30 fps in all resolutions Motion JPEG: 25/30 fps in all resolutions
<b>Video streaming</b>	Multiple, individually configurable streams in H.264 and Motion JPEG Controllable frame rate and bandwidth, VBR/CBR H.264
<b>Image settings</b>	Manual shutter time, Compression, Color, Brightness, Sharpness, Contrast, White balance, Exposure control, Exposure zones, Rotation, Backlight compensation, Fine tuning of behavior at low light, Text overlay
Network	
<b>Security</b>	Password protection, IP address filtering, HTTPS <sup>a</sup> encryption, IEEE 802.1X <sup>a</sup> network access control, Digest authentication, User access log
<b>Supported protocols</b>	IPv4/v6, HTTP, HTTPS <sup>a</sup> , SSL/TLS <sup>a</sup> , QoS Layer 3 DiffServ, FTP, CIFS/SMB, SMTP, Bonjour, UPnP <sup>TM</sup> , SNMPv1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, RTSP, RTP, TCP, UDP, IGMP, RTCP, ICMP, DHCP, ARP, SOCKS
System integration	
<b>Application Programming Interface</b>	Open API for software integration, including VAPIX <sup>®</sup> and AXIS Camera Application Platform; specifications at www.axis.com ONVIF Profile S, specification at www.onvif.org AXIS Video Hosting System (AVHS) with One-Click Camera Connection.

<b>Intelligent video</b>	Video motion detection, AXIS Camera Application Platform enabling installation of additional applications
<b>Event triggers</b>	Video motion detection, AXIS Camera Application Platform, PTZ preset, Memory card full
<b>Event actions</b>	File upload: FTP, HTTP, network share and email Notification: email, HTTP and TCP Go to PTZ preset; Video recording to edge storage Pre- and post-alarm video buffering
<b>Built-in installation aids</b>	Pixel counter
General	
<b>Casing</b>	IP66-rated and IK10 impact-resistant plastic casing, clear dome
<b>Memory</b>	256 MB RAM, 128 MB Flash
<b>Power</b>	Power over Ethernet IEEE 802.3af/802.3at Type 1 Class 3
<b>Connectors</b>	RJ45 10BASE-T/100BASE-TX PoE
<b>Edge storage</b>	MicroSD/microSDHC/microSDXC slot supporting memory card up to 64 GB (card not included) Support for recording to network share (network-attached storage or file server)
<b>Operating conditions</b>	0 °C to 40 °C (32 °F to 104 °F) Humidity 10–85% RH (non-condensing)
<b>Approvals</b>	EN 55022 Class A, EN 61000-6-1, EN 61000-6-2, EN 55024, FCC Part 15 Subpart B Class B, ICES-003 Class B, VCCI Class B, C-tick AS/NZS CISPR 22, KCC KN22 Class A, KN24, EN 60950-1, IEC 60529 IP66, IEC 62262 IK10
<b>Weight</b>	940 g (2.1 lb)
<b>Included accessories</b>	Installation Guide, Installation and Management Software CD, Windows decoder 1-user license
<b>Video management software</b>	AXIS Camera Companion (included), AXIS Camera Station and video management software from Axis' Application Development Partners (not included). For more information, see <a href="http://www.axis.com/products/video/software">www.axis.com/products/video/software</a>
<b>Warranty</b>	Axis 1-year warranty, see <a href="http://www.axis.com/warranty">www.axis.com/warranty</a>

a. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([www.openssl.org](http://www.openssl.org)), and cryptographic software written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)).

More information is available at [www.axis.com](http://www.axis.com)

### Dimensions



### Optional accessories

1. AXIS T8414
2. AXIS T8120 Midspan
3. AXIS T90A White LED Illuminators



# GeViStore-IP/16Bay-2P

## Enterprise Surveillance Storage Unit



### Product information

Digital video system platform with integrated RAID system for storage and transmission of video signals via TCP/IP networks. Storage server RAID system with preinstalled GeViScope software. The operating system of GeViStore-IP is based on Windows Server 2008, which is especially suitable for recording and analysis of network cameras. Windows 2008 features a lot of tools for the administration of local and remote servers.

- | Network Video Recorder (NVR) for recording IP cameras with integrated mass storage solution
- | High availability redundant hardware concept
- | Virtual matrix for many different compression standards and video formats
- | Integrated hardware monitoring functionality for easy diagnosis
- | Video management functionality based on internal programmable logic controller (GeViPLC)
- | Protected against manipulation (lockable front)

Technical data		GeViStore-IP/16Bay-2P
<b>Video &amp; audio sources</b>		
Digital (IP)	Compression algorithms	M-JPEG, H.264 (multimedia), H264CCTV, MPEG4CCTV, MPEG4CCTV/MP
	Supported resolutions	D1, CIF, QCIF, Megapixel, HD
	Supported network cameras	GeViStore-IP/16Bay-2P supports direct recording and playback of network cameras from: GEUTEBRÜCK VIPCAM, GEUTEBRÜCK EcoLine, JVC, AXIS, ARECONTVISION, IQInVision, Sony, Sanyo, Bosch, Acti, CNB, Panasonic and Mobotix. The ONVIF standard is supported. Detailed and current information on supported IP cameras can be found on our website at: Products/useful information
	Recording rate	The recording rate strongly depends on the type of network camera and the compression algorithm used.
	Recording formats	All resolutions supported by the network camera can be recorded and displayed in the corresponding format.
Analog	Analog sources can be connected using CAM2IP or GeViScope-HS/E+ expansion units. For more information, please see the corresponding technical data sheets.	
<b>Video (output)</b>		
Video outputs for live and stored images	VGA output (UXGA, 16,7 million colors) resolution, depending on connected monitor, up to 1600 x 1200 pixels (VGA output).	
<b>Interfaces</b>		
Control inputs relay outputs	Optionally in conjunction with GeViScope-HS/E+ or IO-Contact-16/8	
Serial	1 serial interface (RS-232)	
USB	3 USB 2.0 interfaces, 1 on the front, 2 on the back	
Ethernet	2 x Ethernet 10/100/1000 base-TX interface	
PC keyboard, mouse	PS/2 or USB ports on the back of the unit	
<b>Recording &amp; transmission</b>		
Database throughput	40-50 MB/s with internal storage (max. 16 SATA2/SAS hard drives) 40-50 MB/s for external storage (e.g. iSCSI RAID System, GeViRAID II)	
Playback throughput	Depending on the compression format, up to 32 live channels. MPEG4CCTV: Up to 1200 fps, M-JPEG: Up to 800 fps, H.264 (multimedia): Up to 600 fps (sum of all GSC/view windows on a separate evaluation computer, e.g. GSCSpeedView with built-in quad-VGA graphics card)	
Software matrix	Real „live transmission“ with up to 25/30 fps per each available video channel (analog sources) Network cameras are transmitted with the frame rate you support (digital sources)	
Latency times M-JPEG, H.264 (multimedia)	Depending on the specific IP camera	
Functions for data reduction for network and storage	DCS*	Dual Channel Streaming – separate production stream (resolution, compression quality, frame rate) for live streaming and recording
	DLS*	Dynamic Live Streaming – transmission of scaled images only in the displayed resolution
	ICD*	Intelligent Compression Dynamics – automatic control of the compression depending on image content
	FLTM**	Fading Long Term Memory – automatic (adjustable) reduction of the frame rates in the older database streams
	* For IP cameras from other manufacturers in conjunction with transcoding ** Based on the principle, not for H.264 (multimedia)	

<b>Image processing</b>		
Video analysis (may require license*)	Basic AD	License-free integrated Basic Activity Detection for the entire image area.
	Advanced AD*	Advanced Activity Detection – 42 x 34 freely definable detection cells, reaction time: 160 ms
	VMD*	3 D Video Motion Detection – 128 freely definable areas, response times: 40 ms - 10 s
	Dual Sensor*	Combination of VMD and object classification – especially suitable for particularly difficult surveillance tasks.
	VA Missing*	Image data are evaluated, based on parametrization, for missing objects in the image.
	ANPR* , ANPR-4ChMux*	Number plate recognition for moving vehicles, and for fleet monitoring
	VCA4IP	Video Content Analysis for IP – ability to use the above video analysis methods and IP sources
Diagnostics	Synchronous signal surveillance (analog sources), contrast surveillance, angle monitoring (CPA), GSCDiagnostics	
Transcoding	Conversion of any* streams (IP source) to MPEG4CCTV or MPEG4CCTV/MP format for use of DCS, DLS, ICD and FLTM independent of the selected camera * currently only M-JPEG	
Compression settings MPEG4CCTV, H264CCTV	Variable GOP length VGL Variable frame rate VFR Variable bit rate VBR Constant picture quality CPQ	
Cutlist	Ability to easily create a cutting list for a compact data export.	
Data export	Export of image data available in the following formats: GBF* (GEUTEBRÜCK Backup File), MPEG2* (mpg), MPEG4CCTV (m2v), H.264 (h264), Video-DVD* (vob), JPG (3 Qualitäts-Level), BMP All data media under Windows are supported as well as a direct export to CD/DVD. * Export including audio possible	
<b>Storage media</b>		
Internal	RAID architecture with max. 16 SATA2/SAS hard drives for the multimedia database, only limited by the current disk capacity (e.g. 16 x 2 TB). DVD-RW drive for manual backup.	
Expandable	Other storage media and concepts upon request: Max. 24 SATA2/SAS disks in a larger enclosure.	
<b>General</b>		
Operating system	Windows 2008 Server R2 (64Bit) on separate OS hard drive (Seagate Constellation)	
Processor	2x INTEL QuadCore XEON Prozessor > 2 GHz inside or better	
Main memory	6 x 2 GB DDR3 ECC RAM	
Voltage supply	Redundant power supply unit: 110 - 240 V AC / 60 - 50 Hz ±10%, 2 x 760 W (Hot-Swap)	
Power consumption	Max. 630 W fully equipped (SATA2/SAS RAID controller, SATA2/SAS RAID with 16x HDD, system drive)	
Power input	IEC connector according to IEC 320 C13	
Ambient temperature	0 °C to +40 °C	
Dimensions in mm: as 19" installation unit as a desktop unit	3 U x 710 mm (depth) 482.6 x 133 x 710 (W x H x D)	
Weight	Approx. 34 kg net (without HDDs) / 48 kg (fully equipped)	
<b>Order no.</b>	<b>0.34832</b>	

# GSCSpeedView-AP

## Advanced processing evaluation and setup station



### Product information

Extreme powerful evaluation and playback station for GeViScope+, GeViStore, G-Scope and re\_porter+ as well as setup PC for all GEUTEBRÜCK NVR systems within the network, equipped with Core i7 processor, inbuilt graphic card with 4x monitor outputs, DVD-R/W drive and preinstalled software GSCView. Especially suitable for quick and simultaneous viewing of many video sources from several networking GEUTEBRÜCK surveillance systems.

- | Stable metal sheet housing and GEUTEBRÜCK Design
- | Quad graphic card already inbuilt
- | Core i7 processor and 4 GB RAM
- | Wide range PSU
- | GeViScope+/re\_porter+ software already installed
- | 19" rack mountable

## Technical data

Storage media / RAM	40 GB SSD system hard disk DVD/RW drive
<b>Interfaces</b>	
Serial	1 x serial interface (RS-232)
USB	Minimum 8 x USB 2.0 interfaces, 2 at front side, 6 at rear side
Ethernet	1 x Ethernet 10/100/1000 Base-T interface
Video outputs for live and recorded pictures	Quad-Monitor output in combination with Quad-DVI-I/PCI-E (5.35048) (SVGA, SXGA, UXGA, 16.7 million colors, resolution depending on connected monitor up to 1600 x 1200 pixel)
Audio outputs	1 x stereo (line out, stereo jack connector 3.5 mm)
PC-Keyboard, Mouse	PS/2-connectors at the rear side of the unit
<b>Transmission &amp; Playback</b>	
Display throughput	Minimum 150 - 200 fps (total sum over all GSC/View-Viewers)
<b>General</b>	
Operating system	Windows 7 embedded (Multilingual)
Processor	INTEL Core i7 with 3.4 GHz or better
Mainboard	Fujitsu mainboard D 3062-B
Main memory	2 x 2048 MB DDR3 RAM
Power supply	110 - 240 V AC / 60 - 50 Hz ± 10 % 300 W
Power consumption	From 50 W to 200 W depending on configuration
Mains connector	IEC 320 C13 appliance connector
Ambient temperature	+ 0°C to + 40°C
<b>Dimensions</b>	
19" version	3 HU x 415 mm (Depth)
Desktop version in mm	443 x 135 x 415 (W x H x D)
Weight	11.4 kg
Color of housing	RAL 9011 (black)
<b>Order No.</b>	<b>0.35003</b>

# G-Tect/VMX

## The professional perimeter protection based on video analytics

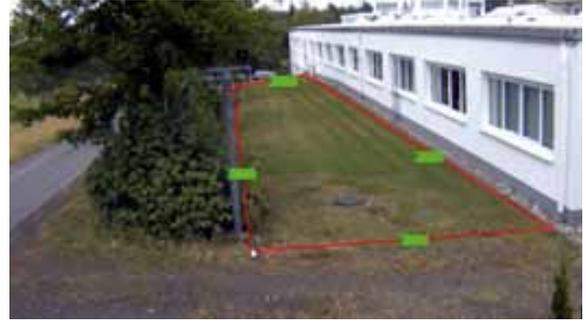


### Product information

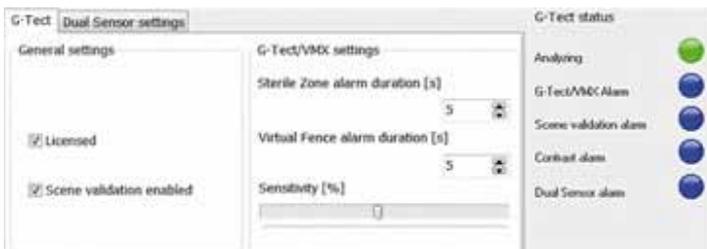
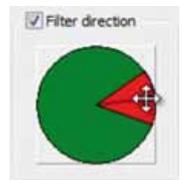
G-Tect, the new video analysis solution developed by GEUTEBRÜCK provides reliable professional protection for outdoor situations. Using the latest smart algorithms, this solution delivers reliable results under all environmental conditions. Systematically occurring effects such as moving foliage, rain, snow or headlights which previously led to unwanted alarms, can now be accurately suppressed. By continually re-evaluating the contents of the background scene and adapting to the current image contents, the system is able to ignore systematically occurring changes. This means false alarms can be effectively avoided or minimized more than ever before.

- Video analytics from GEUTEBRÜCK
- Any number of detection zones
- Easy setup and low installation costs
- Directional detection capabilities for each zone
- Very low false alarm rates
- Optional dual-sensor functionality for outstanding detection reliability
- Hence, free license for 3D video motion detection included
- Alarm messages are stored in the video database for later evaluation purposes

G-Tect/VMX is a fully integrated analytic function, for analysing live or previously recorded video content stored in the internal video database. This makes it a powerful tool for all video surveillance applications.



The video analytics is set up in three easy stages. First, in order to be reliable it needs input about the dimensions in the scene. You provide this by stretching a perspective grid across the scene, and adding the correct dimension in metres to the green box on each side of the zone. This allows the analytics to account for perspective in determining the correct proportions of possible intruders. The second step is to define the desired sterile zones and any directional factor using a simple segment display.



Lastly you adjust the global sensitivity of the detector and the system is ready for duty. Once activated G-Tect/VMX provides reliable protection against intruders and additional security round the clock.

G-Tect/VMX is built into all new GEUTEBRÜCK image recording systems - from the re\_reporter\_sensor+ and the GeViScope+ to the GeViStore and GeViHost systems - to provide effective reporting and recording in critical situations and ideal assistance for users. For even higher levels of security G-Tect/VMX also comes with free activation of GEUTEBRÜCK's classical VMD detector which can be used in combination to form a dual sensor.



This professional and particularly user-friendly GEUTEBRÜCK innovation is the culmination of many years of experience in digital video surveillance technology and in the use of the latest algorithms. – It is ideal for protecting your building or property.

# Helios/L-IR

The LED IR-illuminator with high power and adaptive illumination



## Product information

Especially suitable for discrete and unobtrusive video surveillance in combination with infrared sensitive cameras. Using SMT-LED's of the latest generation, very large illumination distances can be reached. The adaptive illumination feature allows a reliable video surveillance with an optimum and even illumination in all situations. Extremely low electrical consumption can be guaranteed by using high efficiency diodes in combination with an optimized cooling design. This will lead to long life times with constant lighting. Due to the ingress protection of IP 66 the product is suitable for outdoor and indoor applications, while the polycarbonate front cover protects the illuminator securely against vandalism. Various additional features like dimming or short time light boost can be controlled via the PSU's contact input.

- | High efficiency and long range IR illumination
- | Adaptive and even illumination with active LED life control
- | High operational safety, even in case of LED failure
- | Zero maintenance and vandalism proof design
- | Intelligent PSU with enhanced functions to be controlled via input contact
- | PSU-integrated twilight switch
- | Eye protection rating according to VDE 0837, DIN EN 60825-1 standards, 3A rating

## Technical data

	<b>Helios/L-IR-10</b>	<b>Helios/L-IR-30</b>	<b>Helios/L-IR-50</b>	<b>Helios/L-IR-120</b>
Radiation angle (Adaptive)	10° - 20°	30° - 60°	50° - 100°	120° - 180°
Wavelength	850 nm			
Max. range	300 m	160 m	112 m	64 m
Number of LEDs	48			
LED mounting technology	SMT-LED's			
Operating temperature range	-50°C bis + 50°C			
Twilight switcher	PSU inbuilt			
Operating voltage	13.5 V (Current controlled)			
Cable length	2,5 m			
Casing	Aluminium, powder coated, front pane opaque			
Color	Black (RAL 9005)			
Protection rating	IP 66			
Dimensions in mm (W x H x D)	280 x 195 x 66			
Weight	4 kg			
<b>Order No.</b>	<b>5.19700</b>	<b>5.19701</b>	<b>5.19702</b>	<b>5.19703</b>

PSU	Available in 1 version: <b>Helios/L-PSU-1</b>
Voltage range	100 - 240 V AC (Wide range)
Power	80 W max.
Twilight switcher	Photo cell with adjustable twilight level
Contact output	Linked to photo cell for switching of day/night cameras
Contact input	Extended functions can be controlled: Eco-Logic mode (Eco mode: 50 % power, On request: 100 %), Timer control of various modes, Remote dimming, Boost function to increase light output by 33 % for short periods, Perma-Light function to provide a constant lamp output over the complete operating period.
Color	Grey
Protection rating	IP 66
Dimensions in mm (W x H x D)	160 x 160 x 90
Weight	1.8 kg
<b>Order No.</b>	<b>5.20000</b>

Mounting accessories	Available:
Wall bracket	Helios/BWM-001 (Black): 5.18695
Pole mount plate	Helios/PSU-1/MMS-Adapter: 5.18215
Pole mount adapter with tensioning band	WPH/PMA-345: 5.18372
Pole mount adapter with clamp 1x	WPH/PMA-451: 5.18210
Pole mount adapter with clamp 2x	WPH/PMA-452: 5.18211

## ULTRA WIDE ANGLE INFRA-RED

The new series of RAYMAX Infra-Red Panoramic illuminators represent the latest development in ultra wide 180° illumination, for seamless, full scene CCTV images at night. Panoramic illuminators now offer a much better spread of light and longer illumination distances, making them perfect for wide angle, PTZ or 360° dome cameras covering large areas.

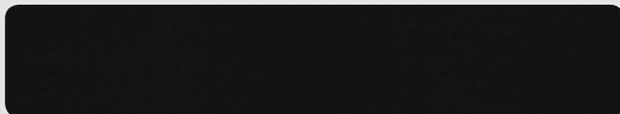
All Panoramic illuminators utilise holographic lens technology to spread and control the light, creating a softer and more even distribution. Panoramic units feature Hot-Spot Reduction Technology (HRT), directing the light where it is most needed to not only deliver longer illumination distances and minimise light waste, but also to provide full scene coverage without hot spots caused by over-exposure.

RAYMAX Panoramic illuminators incorporate the latest surface mount LED technology to deliver provide class leading performance, long life, energy efficiency and zero maintenance. Panoramic illuminators also feature an Adaptive Illumination™ system which allows the angle of illumination to be quickly and easily adjusted onsite anywhere from 60-180° to match the specific camera field of view.

Each unit is fitted with Active LED Life Control to carefully control LED output, delivering consistent illumination power and a projected working life of 10 years.

RAYMAX 300 and 150 series Panoramic illuminators are supplied with bracket and power supply. Control features on the power supply include adjustable power output, photocell and telemetry control. Panoramic lighting now makes high performance illumination for dome cameras more affordable, with longer distances than before.

### PANORAMIC IN USE:



Infra-Red off



Infra-Red on

## APPLICATIONS



## RAYMAX 300



## RAYMAX 150



## POWERFUL

- **PLATINUM®** LED Technology
- Seamless full scene illumination
- 180° coverage up to 100m (328ft)
- 360° coverage with only 2 units

## FLEXIBLE

- Ultimate Adaptive Illumination™
- Various Angles (60°-180°x25°)
- Fully Controllable Power Supply

## RELIABLE

- 10 year life
- Active LED Life Control
- Vandal Resistant

## CONTROLLED

- HRT Hot-spot Reduction Technology
- Zero Light Pollution
- Even Output Illumination
- Semi-Covert (850nm) or Covert (940nm) Options

## ENHANCED EVEN ILLUMINATION

Traditional Wide Angle Lighting



Panoramic Ultra Wide Angle Lighting



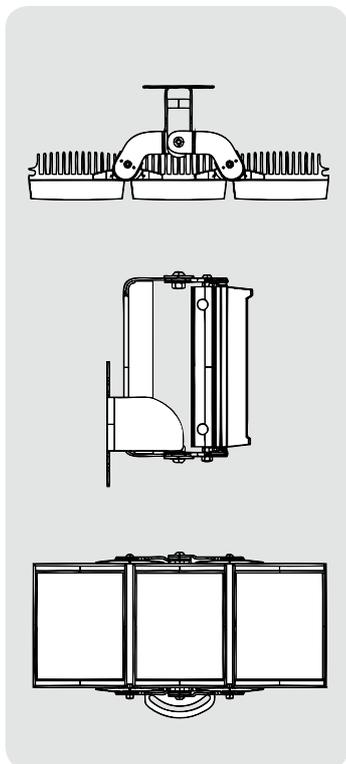
NB: Example shows White-Light illumination for demonstration purposes only

### 5 YEAR WARRANTY

All Raytec CCTV illuminators are provided with a 5 year warranty, unmatched anywhere in the CCTV lighting industry. Raytec illuminators provide guaranteed long life!



## TECHNICAL SPECIFICATIONS



### ILLUMINATOR

- Max Distance:** 300 series - 160m (525ft)  
150 series - 130m (427ft)
- Angle:** 60-180 x25°
- Optics:** SMT LED's
- Consumption:** 300 series - 165W  
150 series - 105W
- Voltage:** 14V current controlled
- Weight:** 300 series - 6kg(13.2lbs)  
150 series - 3.7kg (8.3lbs)
- Environmental:** IP66
- Temp Range:** -50 to +50°C  
(-58 to 122°F)
- Cable Length:** 2.5m
- Colour:** Black
- Wavelength:** 850nm
- Dimensions:** 300 series - 420 x 195 x66mm  
- (16" x8" x 3" approx)  
150 series - 315 x135 x55mm  
- (12" x 5" x2" approx)

### POWER SUPPLY

- Input:** Universal 100-240V AC auto-sensing
- Output:** 165W max
- Temperature:** -50 to +50°C (-58 to 122°F)
- Weight:** 2.4kg (5.3lbs)
- Environmental:** IP66
- Dimensions:** 240mm x 160mm x 81mm  
9" x 6" x 3" approx

### Standard PSU (included)

- Adjustable photocell
- Adjustable power output
- Telemetry Control

### BRACKETRY

U Bracket and Adaptive Illumination bracket included.  
Optional pole mount and wall mount brackets available

### PART CODES & DISTANCES

			NARROW ANGLE	WIDE ANGLE
RM300-AI-PAN	RAYMAX 300, Panoramic Illumination, 60-180°x25°	AI, 850nm + PSU	160m (525ft)	100m (328ft)
RM150-AI-PAN	RAYMAX 150, Panoramic Illumination, 60-180°x25°	AI, 850nm + PSU	130m (427ft)	78m (256ft)

940nm options available on request.

# TopBC-2124

## GEUTEBRÜCK camera out of the TopLine series



### Product information

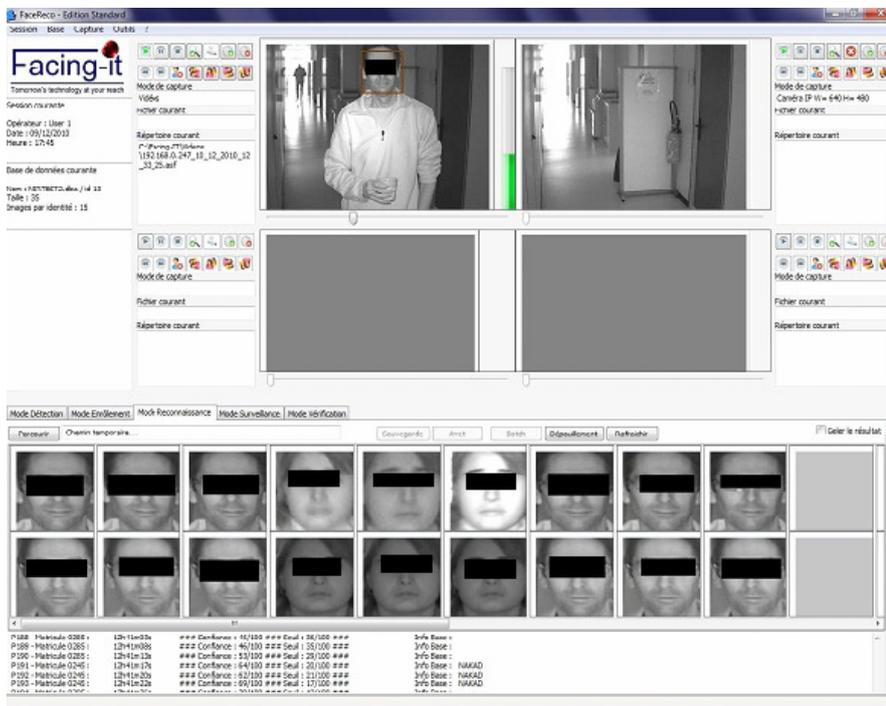
The high resolution 5 Megapixel box IP camera out of the GEUTEBRÜCK TopLine series sets standards in the world of digital video surveillance. The camera can be integrated license free and fits seamlessly into all digital recorder systems from GEUTEBRÜCK. Equipped with a 1/3" CMOS sensor in combination with progressive scanning the camera delivers brilliant and crystal clear pictures both at day and night with picture rates of up to 9 fps. All details of the picture are captured with a resolution of 2560 x 1920 pixel and are transmitted in the compression format H264CCTV which is specially optimized for video security systems - for a professional and gap free video surveillance. Many comfort functions combined with excellent workmanship and its very compact dimensions makes the ensemble perfect. Besides a local voltage supply the camera can be powered centrally via PoE – for highest installation flexibility.

- | H264CCTV compression format for professional video surveillance and optimal performance
- | Fluent and gap free picture playback in forward and backward directions
- | Megapixel-Resolution (5MP) for brilliant picture quality
- | CMOS technology for best recordings also under back light conditions
- | Full and license free integration into all digital GEUTEBRÜCK picture recording systems
- | ONVIF compatible
- | SD card slot integrated

## Technical data

Image sensor (Chip)	1/2.5" CMOS
Picture format	4:3 / 16:9 / multiple areas of interest (AOI)
Scanning system	Progressive scan
Mega pixel	5 MP
Pixel (H x V)	2560 (H) x 1920 (V) effective
Pixel size	2.2 µm x 2.2 µm
Minimum sensitivity: Color B/W	0.65 Lux / F1.2 (IR cut filter) 0.15 Lux / F1.2 (IR pass filter)
Day/Night function	Removable IR cut filter
White balance	Automatic
Exposure	Automatic / Manual
Shutter	Automatic electronic (AES),
Back Light Compensation	Automatic
Flickerless	Automatic
Automatic gain control (AGC)	Yes
Electronic PTZ function	Yes
Text overlay	Yes
Interface	Browser interface
Mirror-Function	Vertical, horizontal, both
Image rotation	180°
Compression	H264CCTV (GEUTEBRÜCK), MJPEG (Multiple compression levels), H.264 (with 3rd party systems)
Picture rate (full resolution)	H264CCTV: 9/15 fps; H.264: 9/20 fps; MJPEG: 9/15 fps
Resolutions	From 160 x 120 up to 2560 x 1920 pixel (free scaling)
Video Streaming	Dual-Streaming for H264CCTV, MJPEG; VBR and CBR for H264CCTV, MJPEG
Protocols	TCP/IP, HTTP, FTP, UDP, ICMP, ARP, DHCP, NTP, RTP, RTSP, RTCP, SMTP, IGMP, ZEROCONF, QoS Layer 3
ONVIF compatible	yes, with firmware version 3.9.0
Processor / Memory	Multimedia Video Processor, FPGA; 256 MB RAM, 32 MB Flash
Motion detection	Yes
Alarm management	Ring buffer for pre- and post alarm; Events triggered via Motion Detection or external input; Image upload over FTP, email or HTTP
Privacy masking	Yes
Lens mounting	CS-mount
Lens connection	DC lenses (AI-DC, connection via standard 4-pin socket)
Operating temperature	0 °C to + 50 °C
Voltage supply	PoE (IEEE 802.3af class 2) or 12 - 24 V DC
Power consumption	Max. 3.2 W
Dimensions in mm (W x H x D)	44 x 29 x 109.7
Connectors	RJ-45 for 10/100 BASE-T Ethernet, full or half duplex; 8-pin terminal for power supply, 3 digital I/O, RS-485
Internal recording	SD card slot (SDHC up to 32 GB max.)
Weight	Approx. 210 g
Certifications	DIN EN 50130-4, FCC, CE, RoHS
Licensing	License/GSC/IP-Cam (8.31150 built-in)
Accessories	Data USB Stick and system plug
Brand	GEUTEBRÜCK
<b>Order No.</b>	<b>5.02816</b>

## Face Detection and Recognition



### FACE DETECTION

FaceReco contains state of the art algorithms for:

- Multiple face detection
- Face tracking
- Eye detection
- Mouth detection

In addition the software includes built in and custom stream capturing from video files and live cameras and is compatible with Milestone X-Protect and Geutebrück Geviscope

### FACE RECOGNITION

FaceReco provides state of the art algorithms for:

- Controlled face recognition
- Nominal face recognition
- Covert face recognition

In addition the software provides functions for alert generation upon suspect recognition using SMS, email, visual or audio modes.

Facing-IT provides you with an efficient, easy to deploy, face recognition solution for enrollment, one-to-one and one-to-many matching. The FaceReco software contains modules for face finding, template creation, quality analysis, watchlist searches and alerts packaged in a simple windows 32 application. The software can be seamlessly integrated into existing applications as well as in completely new application development and is compatible with Milestone X-Protect and Geutebrück Geviscope.

FaceReco is intended for PC-based biometric application development. It includes state of the art face detection, tracking and recognition on static pictures on live streams, and in videos,

The software is developed for Microsoft Windows platform. It is tested on Windows Vista, Windows XP, and Windows 7.

Sample applications and documentation are included in the package. Additional interfaces and samples can be provided on request.

The FaceReco software supports multiple detection and recognition algorithms and works with either static images, video files, or live camera streams. Additional functionality is provided for eyes detection, mouth detection, facial contour cropping, forensic face reconstruction, and alert generation

**LIVE PROCESSING**

The software is capable of processing live camera streams for real-time face detection, tracking, and recognition.

**OFFLINE PROCESSING**

The software processes video databases in offline mode for automatic face detection, recognition and video database indexing

For more information on any of our products or services please visit us on the Web at: [www.facing-it.com](http://www.facing-it.com)

## Technical Specifications

- Platforms Supported: Microsoft Windows XP, Vista, Windows 7; Linux version available through special requests.
- Image Input Formats JPEG, JPEG 2000, BMP, GIF, PNG files
- Video Input Codecs : MJPEG, LJPEG, H261, H263, MPEG1, MPEG2, DIVX MPEG4, XVID MPEG4, RV, WMV
- Input Cameras : MJPEG encoded IP cameras, Axis brand
- Supports inputs from Milestone XProtect
- Supports inputs from Geutebrück Geviscope
- Robustness: The algorithm compensates for natural variability in the face such as expression, facial hair, and hairstyle.
- Lighting : The algorithm is robust to changes in lighting conditions, and does not require additional light normalization
- Eyeglasses: FaceReco uses multi-input enrolment to match faces with or without eyeglasses.
- Background: FaceReco finds the faces in an image against any background, plain cluttered or in crowd. Recognition performance is unaffected by the background.
- Image Resolution : Minimum IOD of 40 pixels
- Race and Gender: Performs well on all races and both genders.
- Partial occlusions and disguise: Forensic face reconstruction matches and reconstructs occluded or disguised faces

## Pack Includes

- Facing-FaceReco  
Contains the elements that encapsulate Facing-IT technology and its supplemental functionality, including face detection, face tracking, facial feature finding, quality analysis, template creation, verification, identification, watchlist searches and alert generation.
- Media Processing application  
A module integrated to FaceReco that allows capturing of video files and IP camera streams. Supports frame capture from .avi .mpeg .flv .mp4 .asf, .wmv, and ts files,
- Software Documentation

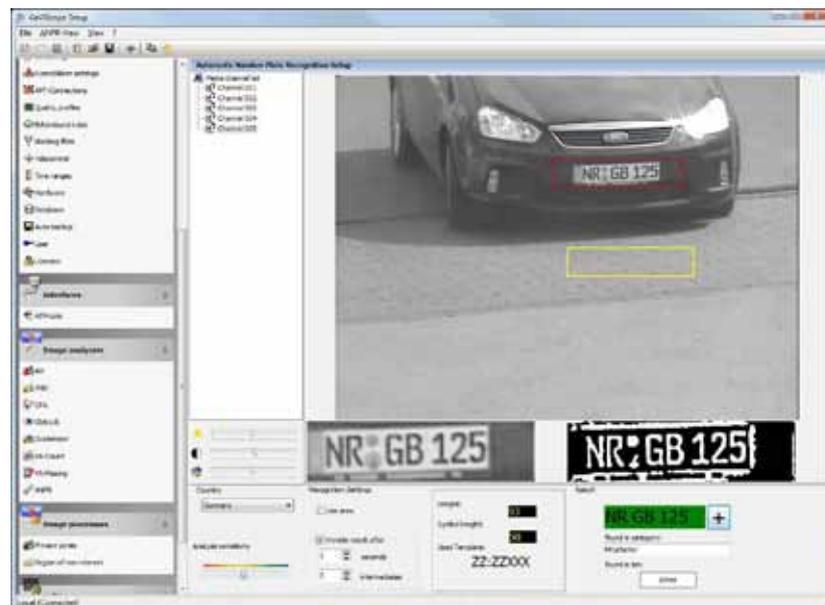
**DEFSECUR FEATURES**

[Face Database Creation](#)  
[Face Detection](#)  
[Face Tracking](#)  
[Facial Features Detection](#)  
[Identity Enrolment](#)  
[Identity Verification \(1:1\)](#)  
[Identification \(1:N\)](#)  
[Suspect Recognition](#)  
[Alert Generation](#)

# ANPR – Number Plate Recognition



Number plate recognition for access control and similar applications



## Product information

The picture data of the selected channel are analyzed for number plate information according to parameter settings and country code. If a number plate is recognized, the corresponding metadata are assigned to the image in the picture database for later analysis. Every available channel under GeViScope and re\_reporter (analog or IP) can be used for the number plate analysis. The number plate data are stored in the system, categorized and saved in a black/white list. Depending on the category and black/white list assignment of a recognized number plate, flexible, configurable system actions can be triggered.

- | Qualifies picture data via number plate information
- | Database search using number plate and metadata
- | Accurate recognition at speeds up to 100 km/h
- | Detection accuracy > 96%
- | Control of access gates etc. in parking lots, loading zones, property entrances, etc.

# Technical data

<b>Monitoring area</b>	Detection area freely definable.
> Set-up options	Simultaneous recognition of up to 4 vehicle number plates within an image. Specification of the typical size of the visible number plate as frame.
> Set-up aids	Display of the active detection area in the live picture. Display of the expected number plate size in the live picture.
<b>Alarm analysis</b>	Analysis in real time. Comparison with black/white list. Comparison with category assignment.
> Set-up options	Adjustable time/number of pictures whose individual measurements are analyzed per number plate recognition procedure (statistically). Maintenance of the black/white list with up to 1,000 entries. Maintenance of the category list. Assignment of the number plate to category and black/white list manually or according to recognition procedure. Optimization of the analysis by adjusting contrast, brightness and color saturation.
> Set-up aids	Display of the original picture with markings of found number plates. Display of analyzed section of the picture as black/white picture and binary picture. Display of the recognized number plate in plain text incl. black/white assignment and category assignment. Feedback regarding effects of the settings for contrast/brightness/color saturation on the analysis reliability via the black/white and binary pictures output by the algorithm.
<b>Installation configurations</b>	Max. horizontal angle between camera and vehicle axle: 20° Max. vertical angle between camera and vehicle axle: 30° Max. vehicle speed: 100 km/h Min. vertical resolution per character: 10 pixels Typical recognition rates > 96% under optimal conditions
<b>Operating system</b>	Windows 7 embedded 64Bit
<b>Camera channels</b>	
> analog	Supported
> IP	Supported
<b>Order no.</b>	<b>8.31235</b>

The currently supported country codes are: Australia, Austria, Belgium, Bulgaria, Belarus, Switzerland, Czech Republic, Germany, Denmark, Spain, Estonia, Finland, France, Greece, Hungary, Italy, Kazakhstan, Lithuania, Luxembourg, Latvia, Morocco, Netherlands, Norway, New Zealand, Poland, Portugal, Romania, Russian Federation, ex USSR, Slovakia, Slovenia, Sweden, Turkey, Ukraine, Uzbekistan, South Africa. Additional countries on request.

	VMD	AD Basic	AD Extended	Dual-Sensor	VA-Class	ANPR	VA-Missing	Audio AD	CPA
GeViScope-HS	○	●	○	○	○	○	○	●	○
GeViScope-IP/SE	○	●	○	○	○	○	○	○	○
re_porter	-	●	-	-	-	○	-	-	○
re_porter_sensor	○	●	-	○	○	○	-	-	○
re_porter_bank	-	●	-	-	-	○	-	-	○
MultiScope III/XP	-	-	●	-	-	-	-	-	●

●= Standard ○=Optional --=Not available

Please take into account that video analysis applications require extensive project-specific consultation. For an optimal result, numerous environmental conditions and system parameters must be considered. Our specialists are happy to provide you with assistance! We guarantee simultaneous analysis of four (re\_porter) or six (GeViScope) D1 (4CIF) resolution video signals on the local device without interfering with other functions. Exception: AD and VMD licenses for analog cameras and CAM2IP and VIPCAM can also be operated without restrictions.

# Experience smarter video surveillance



“ Axis is a company who sets their standards very high, from the outstanding quality of their products right through to exemplary service and support levels. The fact that we have installed thousands of Axis cameras at a leading UK retailer without a single failure, speaks volumes for the confidence we have in partnering with Axis for the long term. ”

Ben Merchant, operations manager at  
KMH Group

# Axis network cameras enable Douglas Court Shopping Centre to cut slip and fall claims.

Additional benefits include cutting theft, improving customer service and protecting their investment in surveillance infrastructure.



Organization:  
Douglas Court Shopping  
Centre and Shipton Group

Location:  
Cork, Ireland

Industry segment:  
Retail

Application:  
Loss prevention,  
safety and security  
and optimized operations

Axis partners:  
RPC Consultants  
and Milestone

## Mission

The Shipton Group, which owns and manages Douglas Court Shopping Centre in Cork, Ireland, required a surveillance solution to cut crime, gather video evidence to dramatically cut slip and fall injury claims, reinforce tenants' health and safety obligations and even improve customer experience to deploy support staff more effectively to tasks and locations around Douglas Court.

## Solution

The Shipton Group worked with Irish IT consultancy RPC Consultants, a leading Axis partner in the region, to deliver a network video system covering the corridors and emergency exits serving the center's retail outlets, inside public areas and the center's car park. A total of 76 Axis network cameras were deployed across the 13.5 acre site. AXIS 232D+ and AXIS 225FD Network Cameras were deployed externally. The AXIS 232D+ were found to perform well in adverse conditions including positioning on top of 100 foot high poles.

All external cameras were linked to the network via wireless routers. A mixture of AXIS 212 PTZ and AXIS 232D+ Network Cameras were also deployed internally, with all internal static cameras utilizing Power over Ethernet, thereby significantly reducing internal wiring costs.

## Result

Shipton Group has almost eliminated slip and fall claims at Douglas Court whilst policing the center's service corridors which also act as emergency exits in case of fire. The new system has also deterred shoplifters - with theft reducing significantly. Local police relations have also improved now that they know they can use images provided by Douglas Court in a court of law because they guarantee identification of those involved. This was not the case with the previous analog-based CCTV system.

"The near elimination of slip and fall claims and clear drop in shoplifting losses at Douglas Court, together with more effective policing of fire escape corridors, all makes for a safer and ultimately more profitable retail center. We are therefore very pleased with the new surveillance system which has definitely delivered rapid return on investment for the group"

Mr Ted Nolan, Health, Safety and Security Manager at the Shipton Group.

### Using IP-Surveillance as a comprehensive management tool

The Shipton Group was looking for a modern surveillance system which would allow Douglas Court Shopping Centre to tackle a number of issues beyond what their ageing CCTV security system had been delivering. The group's IT consultant RPC was tasked with developing a highly scalable and future-proofed solution to help reduce or eliminate a wide range of business issues including exposure to slip and fall claims; blocking of service corridors which also served as fire exits and needed to be kept clear; as well as positively identifying vandals and shoplifters for prosecution purposes.

### Axis delivers higher image quality and the flexibility of an open solution

After piloting both network and analog-based surveillance solutions, network video emerged as the way forward. After testing, Axis network cameras proved the best for image quality, openness, flexibility and easy integration with network video management system Milestone. For example, RPC considered using analog cameras to cover the car parks but found that they would be tied into very expensive proprietary wireless-to-analog devices or face even more expensive and disruptive cabling works through the car parks.

Selecting Axis network cameras meant that RPC could select best-of-breed wireless access point and bridge solutions. Inside the center RPC was able to deliver power easily to selected Axis network cameras through best of breed Power over Ethernet switches, creating additional cost savings.

### Extensive video management possibilities

All Axis network cameras were networked with the Milestone XProtect Enterprise 5.6F video management system. The Milestone system provides easy management, storage, viewing and copying of video evidence in case of an event. Images are stored for a total of 150 days at two frames per second, primarily to catch out

slip and fall claimants who are entitled, by law, to file a claim long after an alleged event. Axis also offers an open Application Programming Interface for all its products, VAPIX®, which allows future integration of the center's current stand-alone systems such as people counting and Automatic Number Plate Recognition systems. 76 Axis PTZ and dome network cameras in total were selected and installed across the car parks and through the service corridors and public areas of the shopping center.

### Solving specific management issues

Douglas Court's new system helps center management. If overnight security staff capture evidence of blocked service corridors, relevant images are sent by email to the center's manager so tenants can be informed the following morning if they have blocked corridors.

Shipton's senior management at headquarters five miles away can now remotely monitor the center's cameras and use the information to help deploy extra staff in areas where they can best help the customers in busy periods. The group's health and safety management team can analyze whether the center's cleaning crew clears spillages quickly enough to avoid the risk of injury and any resulting slip and fall claims. Security officers can use almost total coverage of the center to track suspect individuals from the central monitoring station rather than physically tailing them in and out of shops. In short, Axis network cameras have helped to deliver a state-of-the-art network video system which delivers multiple management benefits to Douglas Court whilst simultaneously future-proofing the group's investment.



# Axis' network cameras enable Bonhams' auctions to be viewed live over the Internet.

Quru 'LiveBid' incorporating Axis network cameras allows registered users to see auction lots in real time from anywhere in the world.



Organization:  
Bonhams

Location:  
UK, worldwide

Industry segment:  
Retail

Application:  
Remote viewing,  
broadcasting

Axis partners:  
Azlan, Quru

## Mission

Bonhams is a privately owned British auction house and one of the world's oldest and largest auctioneers of fine art and antiques. It had been working with Quru, to develop a bespoke Enterprise Resource Planning (ERP) application allowing it to handle the entire auction process.

Building on this, a 'LiveBid' application was launched last year that allowed real-time bids to be made from anywhere in the world via the Internet. However, even though the system was successful, it was audio-only and it was clear that Bonhams was keen to add video so that bidders could not only hear the auctioneer but actually see them. It would bring a whole new dimension to the auction experience and give Bonhams a clear competitive edge.

## Solution

Following a proof of concept trial over a six-month period, the application was re-launched with live footage captured and streamed using AXIS P5534 Network Cameras.

## Result

Thanks to Axis network cameras incorporating Quru's 'LiveBid' application, interested parties can not only hear the auction online and bid on lots from anywhere in the world, but also see the auctioneer, enhancing the whole auction experience for those not able to attend the auction rooms. It has resulted in a system that is being rolled-out to other Bonhams' auction houses across the globe.

"Video has made improvements to our business that we could not have conceived before the trial. Historically, surveillance cameras and CCTV were something that we saw purely as a security measure and not a tool we could use to really improve the way we run our business."

Matthew Girling, CEO Europe, Bonhams.

## Viewed live over the Internet

Bonhams is a privately owned British auction house and one of the world's oldest and largest auctioneers of fine art and antiques. The Bonhams name is recognised worldwide throughout all sectors of the fine art, antiques and the collectors market, with several of its departments established as world leaders within their specialist category.

Quru, a leading opening standards, services and solutions provider, has been a partner of Bonhams for the last few years, working as its outsourced global IT department, responsible for its helpdesk, servers desktops and support. During this time, it has developed a totally bespoke ERP application to manage the entire auction process; from the lot being brought in for valuation, to the auction, to the item being taken away by the new owner. Bonhams wanted to add an interactive application that would allow people to bid for lots in real-time, from anywhere in the world. Robin Porter, Business Development Manager, Quru said: "We have worked with Bonhams to streamline its IT and the bespoke application has revolutionised the way it can manage its business. Taking this a step further, we developed an interactive application that would allow registered users to bid live on auction lots from anywhere in the world."

Launched as an audio-only application, LiveBid allowed registered users to access auctions and place bids in real-time. As good as this application was, Bonhams wanted to go one step further and introduce video so that people could see the auctioneer as well as hear the dialogue and bid in real-time. Robin continued: "We developed the video application and started the pilot at Bonhams' New Bond Street HQ. The trial coincided with a renovation of the building so the solution could be installed during this time. The building now has three additional sales rooms."

The initial proof of concept was trialled for six months before it was rolled out, and uses AXIS P5534 Network Cameras specified and provided after close collaboration between Axis and Axis partner, Azlan, a leading value-

added distributor of networking, communications, mid-range enterprise server, storage and software solutions in Europe. Matthew Girling, CEO Europe, Bonhams said: "We want to make the auction process accessible to those parties that cannot make it. Auctions shouldn't be exclusive to those that can attend, and telephone bids require an intermediary – the bidder relies on whoever is on the end of the phone to represent them."

"We were really impressed with the audio version of Live-Bid and feedback from clients was extremely complimentary. When the suggestion of adding a live video feed was put forward it made perfect sense. The proof of concept was a success, and the additional dimension that video brings to the auction process is extremely valuable and helps set us apart from our competition. Video has made improvements to our business that we could not have conceived before the trial. Historically, surveillance cameras and CCTV were something that we saw purely as a security measure and not a tool we could use to really improve the way we run our business."

AXIS P5534 PTZ Dome Network Camera offers HDTV-quality video and 18x zoom for indoor surveillance applications. With an IP51-rated protection against dust it is ideal for use in demanding environments including warehouses and shops, so was the perfect model for Bonhams' auction rooms. Day/night functionality also ensures high image quality in low light conditions. All cameras provided the benefits of remote access via the internet and excellent HDTV-quality images, both of which are much more complicated to achieve with legacy analogue CCTV systems. In addition, Quru specified three AXIS P1347-E outdoor cameras. These have been installed to take time-lapse footage of the renovations to Bonhams' headquarters. This unique footage shows each stage of the works over the 18 months it took to complete them. AXIS P1347-E Network Camera is a top-of-the-line, 5-megapixel outdoor-ready network camera with HDTV 1080p performance, precise iris control for optimal image clarity and H.264 compression. Its use was perfect for Bonhams as it is particularly suited for outdoor surveillance use and any application that requires coverage of a large area or extremely high image detail.



Bonhams LPB3

azlan  
Part of the Tech Data Group

Quru

## Virtual eyes improve customer experience at Douglas Village.

IP-Surveillance system enables Irish shopping center to improve the quality of its services to shoppers and tenants.



Organization:  
Douglas Village  
Shopping Centre

Location: Cork, Ireland

Industry segment:  
Retail

Application:  
Security and surveil-  
lance, merchandising  
and operations

Axis partners:  
Masterclass Security,  
RPC Consultants,  
Milestone Systems

### Mission

The complete renovation of one of Cork's largest shopping centers gave Douglas Village the perfect opportunity to reconsider its surveillance requirement. It wanted a system that could assist with the day-to-day management of the busy shopping center and to ensure health and safety levels were maintained at all times. The management team's ultimate priority was to provide a safe and secure environment for its tenants and customers and a new surveillance system would certainly enable this.

### Solution

Douglas Village's owners, Shipton Group, consulted with Axis' partners Masterclass Security and RPC Consultants to design and install a new IP-based surveillance system which in addition to being used for security purposes could be used to help with the daily management of the shopping center. Masterclass Security turned to Axis Communications to provide 180 cameras both internally and externally which include AXIS 233D, AXIS 216FD and AXIS 216MFD Network Cameras.

Milestone XProtect Enterprise 5.6F video management system is used to manage, store, record and view footage from the cameras.

### Result

One of the IP-based surveillance system's first purposes was to oversee the building work during the center's refurbishment. The cameras were used to ensure that the building contractors complied with health and safety regulations and to manage the flow of vehicles in and out of the site. With the refurbishment complete, the system now supports the day-to-day running of the site e.g. managing traffic flow as visitors arrive and keeps watch on the emergency exits to ensure they are kept clear at all times.

"Axis' network cameras were the best we could find and completely met our needs in terms of images quality, openness and flexibility. They are also incredibly easy to deploy in any location and integrate with Milestone XProtect Enterprise."

Richard Cronin, director, RPC Consultants.

## Virtual eyes improve customer experience at Douglas Village

Douglas Village Shopping Centre is situated in the heart of Douglas, in Cork, Ireland. Following extensive renovation it has grown in size from 90,000 to 230,000 square feet. It is now Cork's largest shopping destination and boasts 113 shops, 2,000 car spaces, a multi-screen cinema complex and a large variety of pubs and restaurants.

The center's refurbishment offered its owners the ideal opportunity to review their surveillance requirements. The management company wanted a system that could tackle a number of issues beyond what its existing CCTV security system was capable of, with its main priority being to provide a safe and secure environment for tenants and customers.

### Management tool

Douglas Village's owners, Shipton Group consulted with Axis' partners Masterclass Security and RPC Consultants to design and install a new IP-based surveillance system which could be used to help with the day-to-day management of the shopping center as well as to provide security and surveillance. The system's equipment was sourced from Anixter distribution.

Masterclass Security turned to trusted partner Axis Communications to provide the cameras covering the corridors, emergency exits, public areas and car park. Milestone XProtect Enterprise 5.6F video management system is used to manage, store, record and view footage from the cameras. The new IP-based surveillance system was deployed in stages and during the center's refurbishment phase was used to help ensure that the building contractors complied with health and safety regulations and to manage the flow of vehicles in and out of the site. As work on the refurbishment came to a close, roll-out of the IP-based surveillance system was completed with a total of 180 Axis cameras rolled out across the site. AXIS 216FD Network Cameras were deployed internally and externally and AXIS 216MFD, AXIS 233D PTZ and AXIS 216FD Network Cameras were installed specifically to monitor the car parking areas.

Richard Cronin, director, RPC Consultants said, "Axis network cameras were the best we could find and completely met our needs in terms of image quality, openness and flexibility. They are also incredibly easy to deploy in any location and integrate with Milestone XProtect Enterprise."

### Virtual eyes

The IP-based surveillance system now performs a number of functions such as helping to manage traffic flow as visitors arrive at Douglas Village and assist with day-to-day operations, e.g. keeping an eye on the loading bays and ensuring that emergency exits are kept clear and public areas are clean and tidy.

The openness of the Axis cameras combined with Milestone's open platform architecture has allowed Douglas Village to take advantage of a range of other solutions which enable better management of the center. For example, it has installed an AVD People Counting analytics solution on the AXIS 209FD Network Cameras at the center's entrances which give accurate footfall analysis, a key metric used by the retail industry. The system is also connected to the center's access control and intercoms and the car park's sophisticated, color-coded parking system. All elements of the surveillance system feed into the command center, located adjacent to the car park monitors and give the center's management team a complete overview and total control.

"It's like having virtual eyes! It's about time management and getting the most out of your staff," said Bartosz Mieszala, center manager, Douglas Village. "If we didn't have CCTV, we would have to spend most of the day walking around the site and still wouldn't see everything."

"We want our customers to come in and have an enjoyable shopping experience. That means getting in with no issues, finding a car parking space, picking up a shopping trolley and enjoying their visit in a safe, friendly and clean environment," concludes Mieszala.



## Traditional shopping mall installs modern surveillance.

Swedish shopping center, Frölunda Torg, invests in safety and security by installing Axis network cameras.



Organization:  
Diligentia/Frölunda Torg

Location:  
Gothenburg, Sweden

Industry segment:  
Retail

Application:  
Loss prevention, safety  
and security

Axis partners:  
Insupport, EET Nordics,  
Milestone Systems

### Mission

Frölunda Torg is a shopping center located in the city district with over a hundred shops, restaurants and cafés all under one roof. The shopping center, which is managed by Diligentia, has struggled with problems such as vandalism, gangs and theft. Addici Security was hired to manage operations and provide security guards on foot patrol. The company was also responsible for purchasing a new surveillance system as previously all surveillance was being handled by just a few analog cameras, which could not handle their needs.

### Solution

In connection with the renovation of Frölunda Torg, a surveillance system consisting of about 50 Axis network cameras were installed. In the purchase of the system, it was important not only to obtain an open platform, but also good enough image quality to make it possible to identify individuals via the camera images captured. Axis partner Insupport was commissioned to install the network cameras together with "Milestone XProtect® Corporate software" from Axis ADP partner Milestone Systems.

### Result

The new surveillance system has been deployed to monitor entrances, large public areas and delivery areas. All images are stored and recorded locally. The high-quality images captured make it possible to identify exactly what has happened in any incident which occurs, allowing the staff to circulate images and identify suspects. After an incident, images from the cameras can also be examined by the police and used as evidence. For the future, Diligentia is considering an addition to their new surveillance package of around 200 of the shops located in the shopping center. If the new installation proves effective, the additional cameras will be connected to the existing central surveillance system.

"Just like most shopping centers, Frölunda Torg had to take action against shoplifting, intoxicated individuals and rowdy gangs of youths. Therefore, we chose to invest in a solid surveillance system. The property's manager, Diligentia, chose to invest in security guards on patrol in combination with surveillance cameras."

Johan Sjökvist, Business Developer Security at Addici Security.

### Frölunda Torg – a well-established shopping center undergoing change

Frölunda Torg was opened on September 8, 1966 and was the biggest shopping center in Europe at that time. It cost SEK 80 million to build and took seven years to complete. In January 2007, Diligentia, one of the biggest property companies in Sweden, took over responsibility for managing the shopping center. In connection with the takeover, a major renovation began in October 2009 with the first stage providing 20 new shops and a new food marketplace. The second stage will be completed in 2011 and Frölunda Torg will then contain a total of 200 shops, in addition to the service companies and healthcare center already in place.

### Better, more secure surveillance despite fewer staff

During the first stage of the conversion, a surveillance system was installed, half of which consisted of pan/tilt/zoom cameras. The Axis models used in the system are AXIS P5532 PTZ Dome, AXIS P5534 PTZ Dome, AXIS M3204, AXIS P3344, and a number AXIS 209MFD Network Cameras. The cameras automatically record video in the event of motion and sound. In the surveillance center, a guard has access to images from all cameras and can communicate with the guards on foot patrol, who rapidly intervene if required. This makes the solution both cost-efficient and secure.

The surveillance system and the images from the cameras also provide evidence when recalling a sequence of events, and are a good supplement to the security guards. A camera in the designated room where suspected shoplifters are taken has also enhanced the security for both the staff and any suspects who have been apprehended.

"We have higher quality surveillance today despite having fewer staff. Without the surveillance cameras, we would have needed at least two more guards on foot patrol. The camera surveillance and the quality of the images make this possible. The investment in surveillance will be repaid in both the short and long term," says Johan Sjökvist.

Diligentia is also planning to extend surveillance with Axis thermal cameras for perimeter protection, among other things. These will contribute to incidents being discovered sooner. The company also hopes to prevent vandalism to the buildings.

### Facts

The following models from Axis were used for the surveillance of Frölunda Torg:

- > AXIS P5532 PTZ Dome works equally well day and night, even in poor light conditions.
- > AXIS P5534 PTZ Dome has HDTV quality and very high resolution.
- > AXIS M3204 is cost-efficient, small, vandal-proof, has HDTV and is adapted to a retail environment.
- > AXIS P3344 has HDTV quality and works well outdoors.
- > AXIS 209MFD is a compact camera model that is easy to install.



DILIGENTIA



## Increased safety and security with Axis network cameras.

Axis network cameras contribute to better monitoring in Kjell & Company's stores.



Organization:  
Kjell & Company

Location:  
Sweden

Industry segment:  
Retail

Application:  
Store surveillance

Axis partner:  
Alco Security

### Mission

Kjell & Company is Sweden's fourth fastest growing brand name in the Swedish retail sector. Its number of stores during the 2004 to 2009 period has increased from 9 to 46. Kjell & Company's stores have over 7,000 items in stock, and well-functioning surveillance is certainly needed in order to ensure safety and security for the personnel. Kjell & Company was looking for a cost-effective system with great flexibility and the best possible image quality.

### Solution

Kjell & Company evaluated a number of video surveillance systems and came to the conclusion that network cameras from Axis Communications met the company's requirements best. The AXIS P3301 Network Camera was chosen. A Kjell & Company store has, on average, 7-8 cameras for surveillance of the check-out area, entrances and exits, as well as the store grounds and the store room.

The IP-based cameras from Axis were connected to Kjell & Company's existing network and IT system, a solution which has many advantages including easy installation, scalability, and the ability to move the cameras around easily.

### Result

Axis' surveillance cameras improve security when handling cash and this in turn increases the safety for those who work in the stores. The use of digital technology makes for considerably better image quality, and when incidents occur, they can be resolved more easily than with analog systems. Kjell & Company now deploys this state-of-the-art IP surveillance system in all its new stores opened each year, and gradually replaces older systems in existing stores.

"Since Axis network cameras are high quality and compatible with all IT systems, we can rely on a future-proof solution."

Martin Knutson, IT Director at Kjell & Company.

### Cost-effective system

Kjell & Company already had existing software for managing network cameras. However, surveillance cameras with better image quality than the old cameras could deliver were needed. Kjell & Company had a clear-cut list of requirements. The surveillance cameras should deliver good image quality, be easy to install and move, and be able to be angled according to need. The AXIS P3301 Network Camera was chosen. Kjell & Company also wanted to be able to update all of the cameras across Sweden centrally via the main office. "With Axis network cameras we can install a camera and save the basic settings in order to then apply these settings to all cameras in all of our stores at the same time. Being able to update all of the cameras in one go saves us an enormous amount of time and gives us a cost-effective system," explains Erik Ljungdahl, IT Technician at Kjell & Company.

Another important advantage of Axis network cameras is the ability to be able to angle them. Kjell & Company's stores have differing layouts, and the challenge lies in being able to install a camera in the proper way and at the same time get a good overall view of the store premises. "Kjell & Company chose AXIS P3301, a robust camera with compact design and high image quality, which we have designed for demanding indoor installations. The AXIS P3301 also has Axis' latest processor, which means that Kjell & Company is now saving bandwidth and storage with the H.264 compression standard. The camera is also prepared for use with modern applications for intelligent video analysis," says Magnus Zederfeldt, Axis Sales Manager for Scandinavia and the Baltics.

### Flexible future

Kjell & Company, which is one of Sweden's fastest growing chain stores, currently has 46 stores in 26 cities and their goal is to maintain their high store opening rate in Sweden, but also in the long run establish themselves abroad. When a new Kjell & Company store is built, Axis network cameras are installed and easily connected to the existing system. With the help of Power over Ethernet (PoE), the cameras are installed quickly, and the need for separate power supplies and heavy space-consuming hardware is eliminated.

The solution can quickly be adapted according to varying needs. "Our strategy is to continually install Axis network cameras, because in the future we want to be able to switch over to any different kind of software. Since Axis network cameras maintain high quality and are compatible with all IT systems, we can rely on a future-proof solution," says Martin Knutson, IT Director at Kjell & Company.

### Increased benefit with Axis cameras

According to an analysis conducted in the fall of 2009 by the HUI (Swedish Retail Institute) at the request of Axis, nine out of ten store owners are positive toward camera surveillance. Nine out of ten companies have chosen to install surveillance cameras in order to prevent and investigate thefts and shopliftings more easily.

With improved image quality, Kjell & Company has gained a greater ability to identify people at entrances and exits, as well as see details in connection with money handling at check-out. The recorded material can be accessed from Kjell & Company's central network. Store managers are authorized to access the recordings from their store, regional managers can see the recordings from stores in their region and authorized IT personnel have access to recorded material from all Kjell & Company stores. The recorded material is saved for the amount of time that is legally permitted, and the police can request and be given access to the recordings when an incident occurred.

However, Kjell & Company does not solely use the Axis network cameras for store security. The network cameras are also a future investment from a profitability perspective. The cameras' ability to count visitors gives Kjell & Company an effective tool for compiling statistics and analyzing customer flows, best sellers, hot zones, and more. "By using the cameras in this way, we can actively work on improving the layout of the stores, and present our selection of products in the best way. This means that the surveillance system fulfills another important function – it helps us boost sales," concludes Martin Knutson.



## Komplett manages shrinkage and multi-national deliveries centrally with Axis network cameras.



Organization:  
Komplett

Location:  
Sandefjord, Norway

Industry segment:  
Retail

Application:  
Loss prevention, safety  
and security

Axis partners:  
Milestone Systems,  
Vakt Service Teknikk,  
ComScan

### Mission

Listed on the Oslo Stock Exchange, Komplett is a major e-commerce company with 9 web shops in Scandinavia, selling PCs and computer components, consumer electronics, and home and leisure products. Komplett has Pick-up-Points located in Sandefjord, Oslo, Lørenskog, Trondheim, Fredrikstad, Stavanger, Stockholm, Gothenburg, Malmö and Copenhagen. At the end of 2010, Komplett reported a total of 620,000 active customers.

Due to the high value of the IT products involved, parcel tracking is crucial to Komplett's operational excellence. Several incidents at the Pick-up-Points are reported every month. A reliable video surveillance and monitoring system is therefore an important business tool to document the deliveries to, and pickups by, customers, and also to ensure safety for employees.

### Solution

Video monitoring has been part of Komplett's logistics setup since 2000. In 2008 they completely reviewed the security system and decided to move from analog to digital video surveillance. 90 network cameras were installed with Milestone XProtect® Enterprise for 120 device licenses. For more effective bandwidth usage, in 2010 AXIS P1346 network cameras with H.264 compression were added to improve performance from the remote sites. They plan to roll out more of these Axis models to gain greater efficiency of data transfer from the geographically spread pickup locations.

### Result

Komplett's existing IT network infrastructure was already in place making it easy to move the security solution to network video and Milestone IP video management software – a flexible, scalable, open platform solution that lets Komplett continue to grow with new innovations over time. They can now manage video data coming from all their Scandinavian sites centrally at their headquarters.

"I'm not able to get the same sharp and clear image quality with the old cameras as I get with Axis network cameras, whatever settings I'm trying to adjust. I'm very pleased with the results I get from the AXIS P1346 Network Camera."

Tor Kiste, Security and Property Manager for Komplett Group.

### High image quality helps solve incidents

The reason for the move from analog to digital video surveillance was to improve video quality and to store video more effectively, using new technology to make better use of system bandwidth. The data is distributed from all locations using Cisco network infrastructure with IP video products and Milestone XProtect software.

Komplett's main warehouse in Sandefjord, Norway, is over 21,000m<sup>2</sup> in size. During 2010 the Group's web shops handled a total of over a million orders which accounted for over 4 million products: a product is picked every 8 seconds on average, and an order is dispatched every 24 seconds round the clock, every day, all year long. Theft, mistakes or accidents during the delivery process, even some threats towards staff, are issues to be managed.

The AXIS P13 Network Camera Series is comprised of indoor and outdoor-ready fixed cameras that deliver high image quality with H.264 compression, ideal for high-performance surveillance in any environment. The models have a remote back-focus function that enables the focus to be fine-tuned from a computer, which makes implementation and adjustment easier for the integrator of the system.

"The outdoor-ready cameras are good: we appreciate the ease of installation and the remote zoom and focus functionality. I have been able to work in -40 degree Celsius weather and fine-tune the cameras with just my T-shirt on – inside a nice, warm office!" remarks Ole Håkon Norby, Account Manager at the system integrator Vakt Service Teknikk Vestfold.

Komplett is currently adding Axis HDTV network cameras and an Axis thermal camera is installed on the central truck loading dock with a view into the containers outside. Motion detection in the cameras checks if anyone tries to tamper with the containers. Tor Kiste, Security and Property Manager for Komplett, receives SMS alerts from the Milestone software, even at night or during weekends. He can easily check the video in the XProtect Smart Client from home, to confirm if there is a false alarm or a real incident before calling the security service company – this saves a lot of time and money.

"This gives us peace of mind – we can see what's happening during night shifts and on weekends – especially in December which was one of our busiest months," says Mr. Kiste.

### Future possibilities for video-enabling operations

Komplett also monitors the ultra-speedy, multi-level assembly line robots picking the goods at the main warehouse using AXIS P3344 cameras. There can be substantial operational savings when the surveillance system is expanded to monitor critical parts of the packaging process.

Komplett will add more network cameras over time, installing them at gates in addition to more on the production lines, and upgrading to use new functionality that comes out on the market. Axis HDTV network cameras are being further tested for location roll-outs: these will save even more bandwidth costs and give better image quality. An upgrade to Milestone XProtect Corporate is being considered for new administrative features, and a 'plug-and-play' integration framework for adding video analytics or access control interoperability.



The video surveillance system has proved its worth on several occasions. Among other incidents one occurred at a pickup point where thieves took a taxi to the local train station, and with the clear video images, Komplett was able to send the license number directly to the police - who tracked it down to meet the culprits when their train reached the next destination!

 **KOMPLETT**

 **VAKT SERVICE**  
TEKNIKK

 **COM-SCAN**  
NORGE AS



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**[www.defsecur.com.de](http://www.defsecur.com.de)**

“ Axis worked closely with us throughout the trial period and recommended a range of cameras suitable for our varying needs. We chose Axis cameras as they provide excellent image quality and a breadth of coverage that analogue cameras are just unable to achieve... Axis cameras are also extremely easy to install which in a station is a real plus point as cameras can be relocated very quickly and easily if the need arises. These cameras are also a greener option as they use less power than our previous analogue CCTV system and are simpler to maintain. ”

Raul Marquez, senior project engineer,  
Network Rail

# Malmö Central Station – a modern and secure station via the use of Axis surveillance cameras.

With the renovation of Malmö Central Station, 110 surveillance cameras were installed, with the objective of improving passenger security.



Organization:  
Malmö Central Station  
(Jernhusen)

Location:  
Malmö, Sweden

Industry segment:  
Transportation

Application:  
Safety and security

Axis partners:  
EI-kompaniet Svenska,  
Niscayah, Anixter,  
Milestone

## Mission

Malmö Central Station, which is owned and managed by Jernhusen, is Sweden's third largest station. Each year, approximately 17 million people visit the station, and each day 350 trains arrive and depart. In December 2010, the new city tunnel in Malmö was opened, incorporating a 17-km-long connection, of which 6 km is underground. At the same time, the central station's main building was rebuilt and new sections were added. The glass-covered concourse was opened and the central hall was transformed into an attractive marketplace. A large number of surveillance cameras were installed in connection with the renovation work. The cameras were installed to increase the safety and security of passengers and visitors to the station.

## Solution

A total of 110 network cameras monitor all activities in the central hall, the glass concourse, some parts of the station's hall and the car parks at Malmö Central Station. Models used include AXIS P5534-E and AXIS P3344-VE Network Cameras. The cameras are monitored from a security center in the station and the images are also sent to Malmö city surveillance center.

The software that manages the display and the recording of the images comes from Axis partner Milestone, called Milestone XProtect® Corporate video management software.

## Result

Jernhusen does not tolerate a lack of security or damage. Passengers and visitors should be able to enjoy their visit to Jernhusen's stations and feel safe, regardless of what time of the day. Jernhusen has a concept called "safe station", which is all about increasing safety through a variety of measures, ranging from better lighting to station assistants. "Safe station" also means increasing the use of camera surveillance. In addition to increasing passenger and visitor safety, the installation of security cameras also provides security for the security guards, who often must intervene to defuse a situation or remove people from the station. Sometimes the security guards must use physical force, and the cameras provide legal protection for both the guard and the person involved if a report of excessive use of force is submitted. The cameras have thus become an important addition to the patrolling security guard force.

"If you have decided to invest in a camera surveillance system, it is better to choose a really good system that is future ready, as you will profit from this in the long term."

Martin Andersen, Quality Manager at Jernhusen.

## Security, design and installation

Jernhusen has stated that its ambition is to provide people with a safe and secure environment and to provide exactly the service they require. The reconstruction of Malmö Central Station has been an important project for Jernhusen, as its intention has been to preserve and renovate the old time-honored station. Design was an important consideration, and in October 2011, Malmö Central Station received an international award for the best project in railway architecture and industrial design, a Brunel Award, one of the finest distinctions awarded in the railway industry.

Axis partners Niscayah Ltd and El-kompaniet AB have carried out all of the installation work at Malmö Central Station, and they have recently signed a long-term contract with Jernhusen covering the existing operational and maintenance responsibilities for electronic, telecommunications, data and CCTV. In total, there are 110 network cameras, AXIS P5534-E and AXIS P3344-VE models, in use in the surveillance system. The cameras were a good match and fitted in very well with the design requirements. Sandor Haizer, supervisor at El-kompaniet, describes the installation as simple: "It saves both time and money when you can adjust the focus and zoom on the cameras from your computer and you do not have to climb up and down ladders."

## Surveillance and identification

One of the requirements Jernhusen had when choosing the camera models for its surveillance system was the ability to identify people, and for that reason Jernhusen invested in quality cameras with HDTV resolution. The police, and even Customs and Excise, often contact Jernhusen to access images when incidents have occurred or there is a suspicion that a crime has taken place. The police contact the security center several times a week with image requests. One example of an incident that took place in February 2012 happened when a shop in Copenhagen was robbed. The robbers left behind a train ticket which was time stamped at Malmö Central Station. With the help of precision camera images from the security center and eyewitness reports, the police were able to identify and apprehend the perpetrators.

Image quality is extremely important, and the security team at Malmö Central Station rely on the surveillance system. "Many camera systems are poor; however, with the new cameras, you can easily identify people and objects," says Jonas at Bevakningstjänst (the Surveillance service), who is one of the people in charge of surveillance at Jernhusen.

Jernhusen is interested in installing more cameras in the future, There is also an interest in intelligent video applications. Counting people and also studying the flow of movement can easily be achieved using network camera applications. There is also interest in a portable system, where video footage can be viewed on iPads or smartphones.



 Jernhusen

 El-kompaniet Svenska AB  
*Vår ledare strömmen!*

 NISCAYAH

 ANIXTER

 milestone

## Safer ship travel with Axis network cameras.

Fire on board resulted in a new level of safety on Hurtigruten's vessels.



Organization:  
Hurtigruten ASA\*

Location: Norway

Industry segment:  
Transportation

Application:  
Safety and security

Axis partners:  
Milestone, NCMC AS,  
Com-Scan A/S

\*Hurtigruten ASA is a merger of the shipping companies Ofotens og Vesteraalens Dampskibsselskab and Troms Fylkes Dampskibsselskap ASA

### Mission

Hurtigruten is a traditional ferry service for the transportation of goods and passengers between Bergen and Kirkenes in Norway. More than 230,000 passengers sail on one of Hurtigruten's vessels every year. On September 15, 2011 a disaster occurred. On one of Hurtigruten's vessels, MS Nordlys, an explosive fire broke out in the engine room and the passengers and crew were safely evacuated from the vessel. In connection with the renovation of MS Nordlys, it was decided to replace parts of the communication system and infrastructure. Some systems were obsolete and new technology was installed. The consultancy firm NCMC AS was engaged to ensure that the solutions installed were identical to the standard that the company had chosen and that NCMC AS was developing.

### Solution

The old infrastructure on board the MS Nordlys was based on an analog matrix that was completely destroyed in the fire. When the new telephone cables were laid, a modern new IP network was also installed.

This allowed the old analog cameras on board to be replaced with the latest in IP camera technology: Axis network cameras. 23 Axis cameras were installed, along with Milestone XProtect® Professional video management software. The surveillance system was thus integrated with the rest of the infrastructure and MS Nordlys got a state-of-the-art surveillance system that enhances the safety and security of the passengers and crew, as well as improved communication on board the vessel.

### Result

Several essential functions on board the vessel use and benefit from the surveillance system. Reception, the shop, unloading /loading, landing, the car deck, bridge and engine room all represent tasks for the crew, who gain enhanced safety as a result of the cameras. The cameras in the engine room help the engineers on board make sure everything is in order and provide additional safety for the crew in the engine room as their colleagues can warn them in time when incidents occur. The camera up on the mast also provides additional safety and allows the head of the engine room to see the color of the smoke.

"When we develop new solutions for a customer, we never consider only the price. The solution is what is important."

Idar Flø, CEO of i Norwegian Centre of Maritime Communication AS.

### Innovative new high-quality technology

Hurtigruten has served the coastal population since 1866 and was appreciated from the start not only as a transport route but also as a tourist attraction. The route currently employs 11 vessels that call at 34 ports every day, 365 days a year. More than 230,000 passengers sail on one of Hurtigruten's vessels every year.

On September 15, 2011 a disaster occurred. On one of Hurtigruten's vessels, MS Nordlys, an explosive fire broke out in the engine room and the passengers and crew were safely evacuated from the vessel. The fire caused great damage to the vessel, which remained in a shipyard for repairs for five months. Nordlys was only able to re-enter service on March 20, 2012. In connection with the renovation, it was decided to replace parts of the communication system and infrastructure. Some systems were obsolete and new technology was installed.

The consultancy firm NCMC AS was engaged to ensure that the solutions installed were identical to the standard that the company had chosen and that NCMC AS was developing. NCMC AS is a consultancy firm for maritime IT system solutions and evaluates new technologies to find the very best solutions for all individual needs on board a vessel. The objective is to install innovative new technology of the highest quality with the best functionality.

Milestone XProtect® video management software is based on open standards and supports over 1,500 different models of network camera via LAN, WAN or the internet. "The total surveillance solution was very good as Axis has products that fit into many different environments. Milestone's software is flexible, reliable and easy to use. My objective is always to find the state of the art and the Axis/Milestone combination provided this," says Idar Flø, CEO of NCMC AS.

The Nordlys has a dedicated VLAN for CCTV, which is also standardized, making it easy to extend the system to other ships. Installing IP networks on board vessels can be a challenge as the ship moves all the time.

On MS Nordlys this was solved by using 3 different network technologies that complement and back each other up, guaranteeing contact with the control rooms in ports. "By using a common IT-based standard for the infrastructure, this can also be implemented on other ships. It is then easier for the control rooms on shore to communicate with the ships in service," says Flø. The camera models used are AXIS P3343, AXIS P3344, AXIS P1343 and AXIS P1344, and AXIS M3204 in the shop on board the vessel. PTZ model AXIS P5534-E is used on the car deck. The cameras are housed in stainless steel to cope with the extreme external stresses, both from wind and weather but also from moisture and heat down in the engine room. Several essential functions on board the vessel use and benefit from the surveillance system. Reception, the shop, unloading/loading, landing, the car deck, bridge and engine room all represent tasks for the crew, who gain enhanced safety as a result of the cameras.

The cameras in the engine room help the engineers on board make sure everything is in order and provide additional safety for the crew in the engine room as their colleagues can warn them in time when incidents occur. The camera up on the mast also provides additional safety, allowing the color of the smoke to be seen.

"The image quality from the Axis cameras is very high. We have also benefited greatly from Milestone's solution. It provides overview and control and is easy and intuitive to use, as well as providing enhanced safety for the passengers," says Ole Johan Andreassen, Captain of MS Nordlys. Hurtigruten may need to add more cameras in the future. The company is also looking at introducing intelligent video. 'People counting' is an example of intelligence that can be of great benefit in emergency situations, for example an evacuation of the vessel.

### Unique requirements for shipping industry

During the work on installing the new surveillance system on MS Nordlys, NCMC worked with Axis's/Milestone's distributor Com-Scan A/S. Com-Scan A/S is one of the most experienced suppliers to the shipping industry and knows the specific requirements well.



"We have worked within this segment for a long time and have great experience of installations of safety solutions for the shipping industry. The conditions on board a vessel are special and experience is required to find optimum solutions and be able to install them," says Thor Heggedal of Com-Scan A/S.



# Axis network cameras help improve operations at Freightliner's Manchester terminal.

A new surveillance system at Freightliner's Manchester terminal enables users to quickly search and access vital footage and enhance security operations.



Organization:  
Freightliner Ltd.

Location:  
UK

Industry segment:  
Transportation

Application:  
Terminal security, health  
and safety, operations

Axis partner:  
NW Systems Group

## Mission

As the leading intermodal rail freight operator in the UK, Freightliner wanted to enhance surveillance at its Manchester terminal following the successful installation of network video cameras at some of its other terminals in the UK by Axis partner NW Systems Group. The Manchester terminal wanted to take advantage of an IP-Surveillance system to assist with operations around the site and to monitor the arrival of containers at the terminal by road and rail. This improvement in surveillance would also help significantly improve security and health and safety around the site.

## Solution

Following successful deployment of IP-Surveillance systems at many of its other sites in the UK, the organization turned to IP solutions specialists NW Systems Group to provide cameras for its Manchester terminal. NW Systems Group deployed a range of Axis network video cameras, all specifically chosen to deliver excellent image quality even for night time surveillance.

Freightliner uses AXIS Camera Station, IP-Surveillance software that allows for video monitoring and recording for up to 50 cameras, to search and view essential footage.

## Result

The Manchester terminal is now able to take full advantage of IP-Surveillance to assist with on-site operations. The terminal's managers have a prime view of the terminal and can quickly respond to emergencies and distribute resources around the terminal as required. It also found that the number of claims against it for damaged containers has gone down as the site's managers can now quickly access high quality images delivered by the Axis cameras over the network which prove liability.

"Running the system in-house, coupled with the quality and durability of the cameras and software, means that our maintenance costs have been significantly reduced. All in all, we are very impressed with the quality of the Axis surveillance system."

Andy Murphy, deputy general manager, Freightliner terminals.

## Improving operations at Freightliner's Manchester terminal

Freightliner Ltd is UK's leading intermodal rail freight operator moving up to 3,000 containers per day. It is part of Freightliner Group which employs 1,800 staff and has 170 locomotives and more than 3,000 wagons. The organization has 13 terminals throughout the UK and surveillance is extremely important for operational monitoring purposes.

Previously, each terminal relied upon standalone analog CCTV, but following the successful upgrade to network video at some of its other sites, the Manchester terminal wanted to take advantage of the same technology. The Manchester terminal was keen to upgrade to network video because locating footage on VHS tapes was a laborious process and the image quality provided by the analog CCTV system was frequently poor and unusable.

Andy Murphy, deputy general manager, terminals said: "In the past, searching for a specific piece of footage was extremely time-consuming. We needed a solution that would allow us to speed up this process and share footage electronically with others quickly and easily."

## An overview of operations

NW Systems Group, an Axis partner, had already successfully upgraded the surveillance systems across many of the Freightliner sites at a rate of two terminals per year. When Freightliner decided to upgrade at its Manchester terminal, NW Systems Group recommended Axis network cameras so that it could monitor footage remotely, share it across the Internet with other sites and obtain enhanced image quality.

Thirteen AXIS 211 and AXIS P1343 Network Cameras have been installed in strategic locations to record registration plates and container IDs as vehicles arrive and leave the terminal. They are also used for security purposes at the terminal gates.

AXIS 233D and AXIS 232D+ Network Dome Cameras provide the terminal's managers with an overview of operations across the site and the AXIS P3343-VE Network

Camera records images of the drivers. AXIS Camera Station is used to view footage simultaneously and allows the end user to quickly locate and distribute footage.

## Superior image quality

The Manchester terminal now has a fully operational surveillance system that delivers a host of benefits. The terminal's authorized staff members can now view live or recorded video from any terminal, over the Wide Area Network or remotely over the Internet.

Footage of containers as they arrive and depart is now available at the Manchester terminal. If a complaint is received that a container has been damaged, they can find and check the footage much more quickly than on the older system to establish if it is a genuine claim or if it was already damaged on arrival. This reduces the rail freight operator's insurance claims as they have footage proving liability.

From an operational perspective, the cameras also allow the terminal staff to react to any emergencies around the site. Andy Murphy explains: "All of our cameras have motion detection which allows our operators to monitor in real time when a situation arises. We can then take the appropriate action to deal with the issue. The cameras have helped us to streamline our operations. For example, we can now monitor traffic queues at the gates and it also helps us plan the allocation of equipment around the site, as the cameras can monitor what is needed in a specific location.

The quality of the footage has also greatly improved: "The image quality is excellent and the night time images have also surprised us. Running the system in-house coupled with the quality and durability of the cameras and software, means that our maintenance costs have been significantly reduced. All in all, we are very impressed with the quality of the Axis surveillance system and the installation carried out by NW Systems Group," concludes Andy Murphy.



Freightliner

NW Systems Group

# Axis' network cameras help safeguard motorists traveling through the Tyne Tunnel.

New tunnels monitored by IP-based surveillance help improve notorious traffic blind spot.



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Organization:  
TT2

Location:  
United Kingdom

Industry segment:  
Transportation

Application:  
Tunnel/toll booth  
surveillance

Axis partner:  
2020 Vision Technology

## Mission

The New Tyne Crossing has been constructed under the River Tyne in the North East to serve all traffic traveling south and north-bound. The tunnel's operators, TT2, see surveillance as an integral part of its safety and security strategy and required an innovative system that could act as its 'eyes' to monitor the safe transport of commuters through the tunnels' approach roads and toll plazas.

## Solution

Systems integrator 2020 Vision Technology was tasked with providing an innovative approach to surveillance that could provide real-time visual intelligence and post-incident analysis. 2020 Vision recommended an IP-based surveillance system be deployed consisting of 102 fixed AXIS P1343 Network Cameras for the tunnels with additional cameras to monitor the approach roads and toll booths.

## Result

AXIS P1343 Network Camera is a fixed day and night camera and delivers excellent image quality and H.264 performance. It also has a progressive scan sensor which allows for sharp images of moving vehicles in challenging light conditions to be captured. The footage is displayed onto a video wall and individual operator work stations. It is seamlessly integrated at data level to 'talk' to the video automated incident detection system linked to the SCADA systems. Now, if there is a crash, breakdown or fire, the system immediately alerts the tunnel staff who can then initiate the appropriate course of action.

"The Axis cameras provide total coverage of the tunnels and surrounding areas and without this comprehensive footage, we would need many more staff to function safely and collect tolls."

Ron Henderson, operations manager, TT2 Ltd.

### Axis' network cameras help safeguard motorists traveling through Tyne Tunnel

The New Tyne Crossing has been constructed under the River Tyne in the North East which features two tunnels to serve south and north-bound traffic. Both tunnels form a major commuter route between North and South Tyneside and are used by approximately 45,000 motorists on a daily basis. Previously considered one of the UK's worst traffic black spots, the safety of those using the tunnels is still of prime importance so it was essential the new tunnel feature surveillance as an integral part of its safety and security strategy.

The surveillance system needed to be able to act as 'eyes' to see through the tunnels and monitor the approach roads and toll booths. Following an evaluation of a variety of systems, local systems integrator 2020 Vision Technology was asked to design and install a new surveillance system.

### A challenging environment

The New Tyne Crossing presented an interesting challenge to 2020 Vision as the tunnels are confined spaces with restricted light conditions. In order to provide TT2 with the ability to 'see everywhere,' 2020 Vision needed to come up with an innovative approach so that it could provide real-time visual intelligence and post-incident analysis. Peter Houlis, managing director, 2020 Vision Technology said: "The safety of anyone passing through the tunnels is imperative. When specifying cameras, the ability to share and access video images is essential in those situations where immediate and urgent action is required."

2020 Vision Technology recommended an IP-based surveillance system be deployed and demonstrated how the progressive scan sensor on an Axis network camera can produce clear, sharp images of moving vehicles.

### The 'eyes' of the tunnel

2020 Vision Technology deployed the new system which consists of 102 fixed AXIS P1343 Network Cameras in the tunnel and additional cameras monitoring the approach roads and toll booths.

AXIS P1343 Network Camera is a fixed day and night camera and delivers excellent image quality and H.264 performance. It also has a progressive scan sensor which allows for sharp images of moving vehicles in challenging light conditions to be captured. The cameras sit on the tunnel's common network infrastructure using Power over Ethernet (PoE) and 2020 Vision hosts the digital recording system which feeds images taken from the Axis cameras to the tunnel's traffic incident system.

Digital footage is recorded around-the-clock on to a network video recorder (NVR) and is then displayed onto a video wall and individual operator work stations. This footage is then seamlessly integrated at data level to 'talk' to the fire safety systems, video analytic traffic management supervisory control and data acquisition (SCADA) systems. The system then alerts the tunnel's staff when an incident such as a crash or breakdown occurs so that the appropriate course of action can be taken.

Ron Henderson, operations manager of TT2 Ltd said: "The IP-based surveillance solution provided by 2020 Vision Technology plays a key role in the safe operation of our site, the remote operations of our toll plazas and to enhance the security of our precincts and out stations. The Axis cameras provide total coverage of the tunnels and surrounding areas and without this comprehensive footage, we would need many more staff to function safely and collect tolls."

The tunnel's operators now have 'eyes' everywhere and have access to real-time visual intelligence and post-incident analysis from which informed decisions can be made. The system helps the tunnel's operators with safe and efficient traffic management and protects against fraud at the toll booths. The new surveillance system has also meant that there are just three interactive operator workstations in the tunnel's control room and has enabled fewer operators to provide a more sustainable, efficient and safer journey through this busy commuter route.



## Safer travel with network cameras from Axis Communications.

Axis network cameras make the trip safer and save time for SL's travelers and drivers.



Organization:  
SL – Storstockholms  
Lokaltrafik AB

Location:  
Stockholm, Sweden

Industry segment:  
Transportation

Application:  
Safety and security, and  
prevention of vandalism

### Mission

Storstockholm's Lokaltrafik AB (SL) transports 700,000 passengers daily, by bus and train, within the Stockholm area. To create a safer environment and a stress-free journey for both travelers and personnel, it is necessary to have complete surveillance of buses, trains, stations, waiting rooms, pathways and train depots. In 2005, SL began the Security Project (Trygghetsprojektet) with the intention of creating a safer travel and work environment, minimizing interruptions in traffic, and lowering the high costs of graffiti and vandalism control, and sanitation. Surveillance cameras are a significant part of the Security Project and, in 2007, installations were begun, using Axis network cameras in buses, on subway trains, and in waiting rooms and train depots.

### Solution

SL knew the strict requirements for the installation. The cameras in the driver's workplace and in the passenger areas must withstand both sabotage and unfavorable environments. Because there was no special camera for the transportation market, Axis was given the assignment, together with SL, to design a whole new camera that would fulfill the specific demands.

The result was AXIS 209FD-R, a small compact camera that can withstand a large amount of abuse. Approximately 10,000 network cameras have been installed in 2,200 buses. There have been about 4,500 fixed cameras, both AXIS 225FD with vandalism protection, as well as AXIS 212 PTZ with fisheye optics, installed in subway and commuter stations, in waiting rooms, pathways, train depots and train coaches. All cameras at the stations are connected to SL's Security Central, where all events are registered and responded to. With almost 14,500 network cameras, this installation is the largest in Sweden.

### Result

The Security Project contributes to a safer environment for both personnel and travelers. The surveillance system has a preventative effect because the number of crimes decreases with camera surveillance. Through the 24-hour Security Central, SL can decrease the interruptions in traffic. The system also helps the police to secure evidence against any wrongdoers, as digital image technology offers a clear identification of objects and people. In the long run, SL can lower costs for graffiti control, sanitation and other maintenance costs, in addition to improving SL's traffic planning and the security of the traffic.



### Intelligent and robust innovations

In the new surveillance system, Axis contributes to the development of network cameras for surveillance, identification and guarding of non-authorized entry to train tracks. The digital images are stored in a mobile video and alarm surveillance system (Mobile Digital Video Storage System) that has been integrated into SL's existing traffic and safety system.

SL had strict requirements for the network cameras. The cameras that were being installed in the buses, at the drivers' seats and in the passenger areas needed to be very durable against possible sabotage, and also withstand moisture, dust and vibrations. At the same time, the cameras could not be too hard or sharp, risking injury to passengers during an accident. Axis and SL sat down and designed a whole new type of intelligent camera that could withstand abuse.

"We had to try to identify every stress that a camera can be subjected to in a public environment. AXIS 209FD-R is designed to handle the most unfavorable conditions and has built-in intelligence, meaning that the camera itself sends an alarm if something is wrong with it. For example, if there is a person standing in the way of the camera, the alarm will activate. If the camera has been sprayed with paint, the event is registered," says Kent Fransson, Product Manager at Axis Communications.

Because the AXIS 209FD-R continuously records images, and because the surveillance system is integrated with SL's traffic system, the camera's images can be marked with bus stop information and GPS synchronized time.

### High image quality and flexibility with Axis network cameras

To make the security even better, SL has chosen to install about 4,500 cameras in the surrounding areas. About 3,500 fixed cameras, specifically AXIS 225FD with an aluminum cover, have been installed in escalators, on station platforms and along tracks. The aluminum cover protects against vandalism, and the camera has such a high image quality that it can fulfill two functions: monitoring the status of the train platform, and monitoring the tracks. By the turnstile booth, and at certain corners in the stations, SL has chosen to install about 900 fixed cameras, namely the AXIS 212 PTZ with fisheye optics, that can identify people.

Because all cameras are connected to the already existing IT network, SL did not have to install new cables for electricity and video. New installations in the future will be easier, and it is also cost-effective to use the same cables for both power supply and network video, using Power over Ethernet. Flexibility is also better because cameras can be installed virtually anywhere.

Axis' market-leading position for network cameras, the flexibility of the system, and Axis' ability to meet SL's clear requirements for a durable camera for surveillance of drivers' seat and passenger areas, were all important reasons for choosing Axis as a cooperating partner.

"We had the privilege to be involved very early in the Security Project, and because of this, we have been able to develop specific cameras and features as needed. It is a big advantage that we, as a product supplier, can take part in the project's development phase. We can be an active part in problem-solving with quick turnaround. It is also incredibly enjoyable and instructive for us to work in such a close relationship with the end user."

Magnus Zederfeldt, Area Sales Manager Nordics and Baltics, Axis Communications.

"The surveillance system and the Security Project have been positive changes for us. It has given us more return than we had predicted. Among other things, we find that graffiti has decreased. We can also plan traffic better through the ability to act quickly and, if needed, put extra trains into service if the load gets too high, and also in connection with construction and other things. The surveillance system gives us the ability to encourage drivers to be extra careful if there are a lot of people on the platform," says Stefan Danielsson, Project Manager for SL's Security Project.

Because of the high image quality, the police can make good use of the image material as evidence. The police can, if needed, request recorded material, and the police image analysis group is working daily to solve crimes with the help of the cameras in the Security Project. Each year, there are between 500-600 images requested from SL, and the police say that, in cases where there is recorded material, they find that almost all of the images are so good that they can be used by the current investigator. Among other things, the police image analysis group has, since their beginning in 2007, solved several robberies, and they have also been able to catch a serial rapist in Söderort, in Stockholm, with the help of a camera on a night bus.

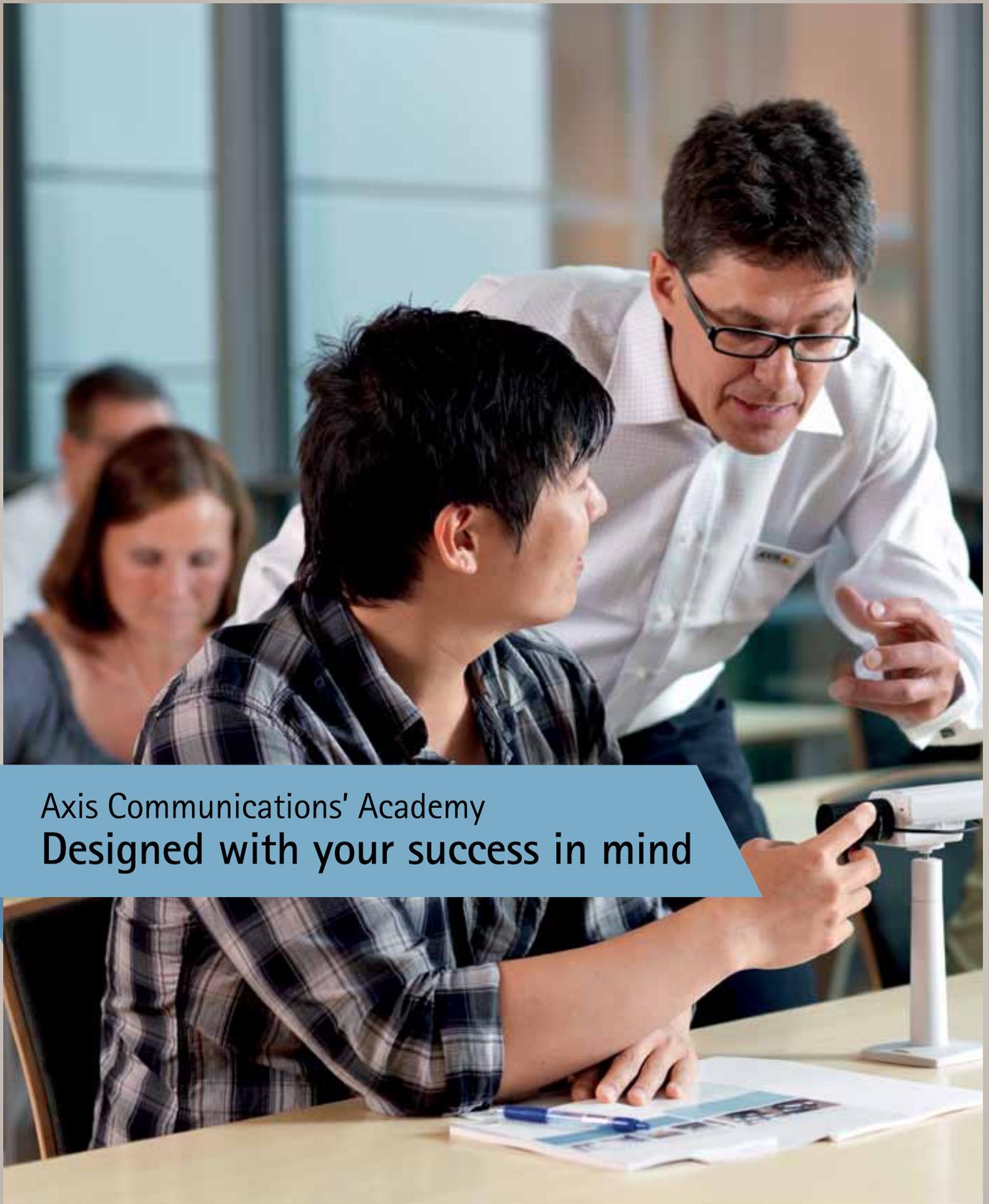
### Good surveillance creates a safe journey

About 3,000 security-related events occur every month within SL's traffic area. With the help of the new surveillance system, the operator can go to the right camera to see what event tripped the alarm. An operator with special authority assesses the situation and can request appropriate resources, such as a security guard or the police.

"Because of the high resolution of the network cameras, it is significantly easier to identify people and events. This makes it easy to act quickly. But we are, of course, protecting personal privacy. All image material is handled with confidentiality and, in the event of a possible crime, all images are handed over to the police. We do not carry out any investigation ourselves, and our staff has no ability to review recorded material," says Bengt Carlsson, SL's Security Manager.

The new surveillance system with Axis network cameras creates a safer environment for both personnel and travelers. Another aspect is that SL can lower the costs of traffic interruptions, graffiti and vandalism control, and sanitation.





Axis Communications' Academy  
Designed with your success in mind

**Get the Axis picture. Stay one step ahead.**  
Visit [www.axis.com/academy](http://www.axis.com/academy)

“ We have worked with the NEC to deliver an integrated solution to improve the effectiveness of its security and traffic teams. We carried out a rigorous testing process of potential solutions to ensure an enhanced customer experience alongside increased safety measures. We chose to install over 200 Axis cameras within the fully integrated solution. ”

Paul Austin, director at Vindex Systems

# Axis cameras provide discreet secure environment for staff and guests at luxury hotel.

State-of-the-art surveillance system guarantee staff and client safety.



Organization:  
La Suite West

Location:  
UK

Industry segment:  
Hotel/Restaurant/  
Tourism

Application:  
Safety and security

Axis partners:  
Trident Systems UK Ltd,  
Anixter

## Mission

The recently remodelled La Suite West, formerly The Hyde Park Hotel in London, is the minimalist and latest creation of award-winning British designer, Anouska Hempel. The design of the hotel meant that discreet surveillance was essential and therefore the hotel wanted to upgrade its security system to reflect this. As well as being discreet, the solution needed to produce high-quality images and offer the ability to monitor video streams both on and off-site. The surveillance system, therefore, needed to be state-of-the-art in order to guarantee staff and client safety, not compromise security, and continue to provide the highest quality service.

## Solution

La Suite West, one of a small chain of luxury boutique hotels, has worked with Axis partner, Trident Systems UK, for a number of years to specify and manage the hotel chain's telecoms, networks, security and CCTV. After extensive research, it specified IP surveillance cameras and chose the AXIS M3014, AXIS M3011 and AXIS P3346-VE Network Cameras as they met the high

specification required by the hotel, whilst also keeping within budgetary constraints and providing discreet, quality surveillance with additional monitoring functions.

## Result

The Axis surveillance system has exceeded La Suite West's needs. The hotel understands security is paramount and now has a reliable, high-quality, advanced surveillance system that can be accessed and monitored 24x7, both on and off-site. It provides the hotel with the control it needs and gives it the added flexibility to easily grow the system to meet future security requirements. This state-of-the-art system, installed by Trident and the products provided by Axis' distribution partner Anixter, easily meets all requirements of the pristine, boutique hotel. It allows staff to deliver best practice and provide a safe and secure hotel environment to all hotel guests. An unexpected additional benefit of the system is that it has assisted staff training, and allowed the hotel to further improve customer service.

"I didn't realise just how much I had in one system. There are many features and layers and the footage can be analysed in many different ways to your advantage. I am extremely impressed with the innovative system, not only for security, but also to monitor time management and to use as a training tool to enable perfect service and housekeeping."

Mr Meir Abutbul, director of La Suite West Hotel.

### A discreet secure environment

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The Axis installation system has been flexibly designed to provide numerous benefits to the hotel including, remote access and viewing in real-time, excellent picture quality, outstanding night surveillance, the ability to e-mail images and remote monitoring access via smartphones. The discreet but effectively installed cameras are utilised to monitor staff movements and ensure quality control. It has allowed hotel management to have greater control and monitor all of the hotel's operations. It has also been a valuable tool for the food and beverage department as it has been able to use the footage to monitor the kitchen and restaurant floors.

Mr Meir Abutbul, director of La Suite West, expressed his satisfaction with the Axis cameras that have been installed both internally and externally in the hotel's public areas: "I didn't realise just how much I had in one system. There are many features and layers and the footage can be analysed in many different ways to your advantage. I am extremely impressed with the innovative system, not only for security, but also to monitor time management and to use as a training tool to enable perfect service and housekeeping."

Trident Systems UK Ltd is a recommended installer for Axis products. It has an excellent industry reputation for its quality of workmanship, attention to detail and ability to work with management to discretely install systems while maintaining maximum surveillance coverage. Mr Abutbul continued: "Trident Systems UK has gone above and beyond its remit to satisfy our requirements and this has given us peace of mind knowing that we have ongoing technical support as part of the service."

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# Axis network cameras enable the NEC to deliver security and traffic management in real-time.

Innovative solution helps deliver the NEC's aim to become 'venue of choice'.



Organization:  
The NEC

Location:  
Birmingham, UK

Industry segment:  
Stadiums/Venues

Application:  
Safety and security

Axis partners:  
Vindex Systems,  
Genetec

## Mission

The NEC is located on a 610-acre site, eight miles from Birmingham city centre offering more than 186,000 square metres of covered exhibition space spanning 33 conference suites and 20 interconnecting halls, in addition to over 160 acres of hard standing ground and 75 acres of woodland. The venue welcomes approximately 2.1 million visitors each year to over 140 diverse trade and consumer events - including long-standing shows like BBC Gardeners' World, BBC Good Food Show and Spring Fair alongside specialist exhibitions such as Clothes Show Live and Festival of Quilts - plus over 400 live events and conferences. The NEC has stated that it wants to be the 'venue of choice' for the UK's leading events.

## Solution

Axis partner Vindex Systems led a proof of concept trial which included camera shoot-outs using various manufacturers' cameras side by side onsite at the venue to see in a live situation which would be best for the challenge. The result being that Vindex selected Axis HD IP PTZ and fixed cameras to be installed.

## Result

Thanks to Axis network cameras' ease of set up, high-quality images and their ability to integrate with the Genetec Video Management Software platform, the NEC now has real-time high-quality information and the necessary communication tools to deliver 'intelligence-lead safety, security and traffic management'.

"Our customers' experience and safety is paramount. The fact that we are using a state-of-the-art, future proof security and traffic management solution enables us to be confident that they will keep on returning to our venue."

Gary Masters, the NEC group security and traffic operations manager.

### Better utilising security and traffic teams to reduce incidents

The NEC is located on a 610-acre site, eight miles from Birmingham city centre offering more than 186,000 square metres of covered exhibition space spanning 33 conference suites and 20 interconnecting halls; in addition to over 160 acres of hard standing ground and 75 acres of woodland. The venue welcomes approximately 2.1 million visitors each year to over 140 diverse trade and consumer events - including long-standing shows like BBC Gardeners' World, BBC Good Food Show and Spring Fair alongside specialist exhibitions such as Clothes Show Live and Festival of Quilts - plus over 400 live events and conferences.

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Paul Austin, director at Vindex Systems, an Axis gold partner, said: "We have worked with the NEC to deliver an integrated solution to improve the effectiveness of its security and traffic teams. We carried out a rigorous testing process of potential solutions to ensure an enhanced customer experience alongside increased safety measures. We chose to install over 200 Axis cameras within the fully integrated solution."

The project was part of the NEC's wider objective to become the 'venue of choice'. Security solutions are key to achieving this; if customers and exhibitors are confident of the security measures in place at the venue they will select it to host their events. Vindex Systems acted as the principal contractor and provided all civil and electrical works. There was a team of 20 working on site.

Paul continued: "The project was challenging as the site was continuing to operate during the installation. There were over 2 million visitors during the duration of the project so we had to ensure the work was well coordinated with the minimum of disruption. We also had to create a multi-point wireless network to ensure the infrastructure had the ability to support the new cameras and management software across the whole 650-acre estate."

The Axis cameras selected by Vindex Systems were subjected to a camera 'shoot-out', alongside other manufacturer's cameras on site to prove their effectiveness and quality in a live environment. The Axis cameras proved to be the best quality and most effective solution.

Vindex selected to deploy 168 Axis cameras made up of 130 fully functional AXIS P5534 indoor 720P HDTV pan/tilt/zoom cameras, five AXIS P3344 720P HDTV indoor fixed dome cameras, eight AXIS Q1755 720P HDTV cameras with integrated ten optical zoom lens. They also provided NEC with 25 AXIS M1054 HDTV cameras, made available to exhibitors to hire during exhibitions to provide them with real-time streaming of the event.

40 AXIS P3367-V fixed dome cameras were deployed to cover the exhibition centre's main entrances in order to meet the challenging light conditions due to the amount of glass used in the lobby. Axis solutions were also deployed to enable seamless integration with the chosen Genetec VMS Platform, which is vital in centrally managing the security and traffic operations for the site from a newly created 'Venue Operations Centre'. The integrated solution provides all operators with intelligent, high quality, intuitive information in order for them to make informed decisions based on the time of day and activity on site.

Gary Masters, the NEC group security and traffic operations manager concluded: "The centrally managed and integrated solution provided by Vindex Systems has already proven to be an effective tool. The high quality images that the Axis cameras provide are vital in our efforts to reduce incidents of crime and ultimately helped to improve the effectiveness of our security and traffic management team.

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the nec  
birmingham

SYSTEMS  
VINDEXTM

Genetec

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the nec  
birmingham

SYSTEMS  
VINDEXTM

Genetec



# Axis' IP platform for physical access control

## Opens the door to the future

With AXIS A1001 Network Door Controller, we're introducing a new level of freedom for physical access control. Freedom that stems from the same open IP philosophy we pioneered in video surveillance.

Traditional proprietary systems mean limited options, central control units with often complex and expensive cabling, as well as restricted integration and scalability. Now, with AXIS A1001 Network Door Controller, there's finally an open, easy-to-use and future-flexible alternative for physical access control.

AXIS A1001 is a non-proprietary platform for access management. It meets requirements for both small installations and advanced enterprise systems, offering a simpler, smarter, more streamlined alternative — whether you need to install one door or 1,000.

## Versatility powered by IP

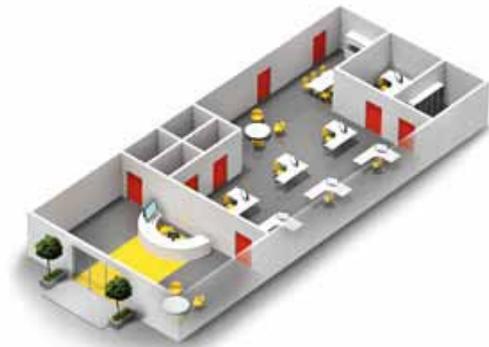
- > Freedom to choose components (hardware and software) from multiple vendors
- > AXIS A1001 is easily available through our wide network of partners
- > Well-documented and easy to implement, the open Application Programming Interface (API) allows you to pick from best-of-breed software options to meet your needs
- > Standard IT equipment for time and cost-efficiency
- > Easy integration with other IP systems such as video surveillance
- > Edge solution — a smart, independent device at each door; no central server or control unit needed when using the built-in software



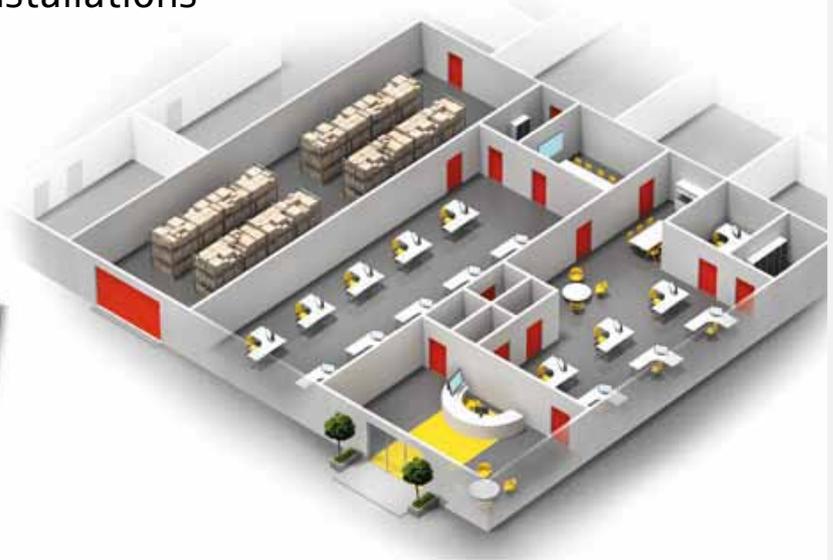
# Two pathways. Unlimited destinations.

With AXIS A1001 Network Door Controller, you can choose between our built-in, web-based software or any partner solution. So you can find exactly the right fit for your needs – independent of system complexity and size.

## AXIS Entry Manager Small, basic installations



## Partner solutions Large, enterprise installations



Traditional, proprietary physical access control systems require particular setups, parts, and service processes. Gain freedom to choose (and save time and money) by asking for IP, standard IT equipment, and an open interface.

## Discover boundless possibilities with an open architecture

Axis' open API (Application Programming Interface) gives you the freedom to mix and match best-of-breed hardware and software from a limitless range of software partners. Equally important, it can also enable integration with other IP-based systems and

third-party applications, without the need for costly hardware boxes to make the "bridge" between different systems. Video surveillance, intrusion detection and heating and ventilation are just a few of the potential opportunities.



# Physical access control has never been easier

AXIS A1001 offers you the easiest way forward with IP physical access control. Everything from simplified cabling to color-coded installation makes implementation seamless and administration intuitive.

## Simplicity powered by IP

- > Simplified cabling with PoE
- > Color-coding and hardware installation wizard
- > Support for most reader types on the market



With Power over Ethernet (PoE), cabling is reduced to a minimum – speeding up installation and saving cost. PoE lessens the need for power cables to accessories such as locks, sensors and readers, as well as proprietary data networks.

## Intuitive, color-coded configuration wizard

Our configuration wizard and color-coded connectors make it easy to get started with AXIS A1001.



AXIS A1001 is plenum-rated. The installation will be easier and more cost-effective since no additional cabinet has to be installed when it is mounted in the plenum above the ceiling.

## Easy-to-use access management software

Conventional access control products and systems are normally designed and optimized for large installations with hundreds of doors and perhaps thousands of credentials. And the software available is often difficult to use. Yet, the vast majority of installations are much smaller — typically less than 10 doors. That's why we've designed the integrated AXIS Entry Manager software to be intuitive and easy to use for access management in smaller installations. Of course, our open API gives you a choice of software so you can also find the ideal fit for larger installations.

### IP at the edge

Smart IP solutions allow you to decentralize for easier, more flexible installation and scalability. Using AXIS Entry Manager eliminates the need for a central control unit or server. Each AXIS A1001 Network Door Controller has memory and processor integrated in the unit. Redundant system data, credential data and configurations are automatically synced between all units in the system.



Features quick import of existing cardholders with easy drag-and-drop management, as well as automatic sharing of configurations for new controllers.



Easy overview of specific access schedules depending on a user's role in the organization, as well as specific schedules for holidays and weekends.

## A physical access control solution that matches your pace

Axis gives you full flexibility in scaling up your solution. From adding a single door in a small office to integrating video surveillance in a large-scale facility, AXIS A1001 allows you to grow at your own pace.

### Scalability powered by IP

- > Ideal fit for both small and large installations
- > Easily scalable by any increment
- > Open API ensures future flexibility as vendors develop new software and hardware to meet changing needs
- > Axis' extensive partner network ensures a choice of best-of-breed solutions

# AXIS Entry Manager

## Small, basic installations



Up to 33 controllers and 400 users, basic security requirements

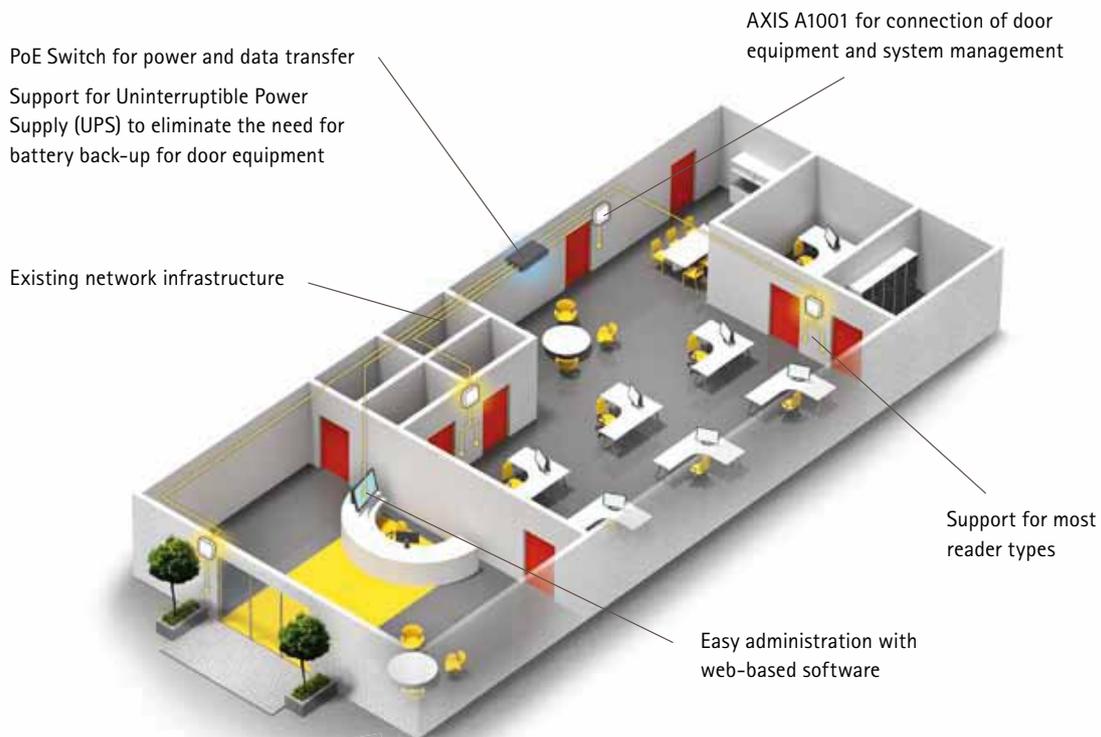
### Basic access management with ease-of-use in focus

#### Effective perimeter and indoor security

- > Reader in / reader out with convenient lock and additional lock for extra security during nighttime
- > Can support adjacent doors with reader in

#### Easy administration with web-based software

- > Cardholders, Groups, Schedules incl. Holidays
- > Control doors centrally
- > Track events, E-mail and SMS notifications



What happens when you need to add a door or two? Make sure your system can scale up at any increment. Traditional hard-wired systems only handle a certain number of doors (typically 4, 8, 16, or 32).

# Partner solutions

## Large, enterprise installations



Beyond 33 controllers and/or many users, advanced security requirements and need for integration to other systems such as IP video surveillance.

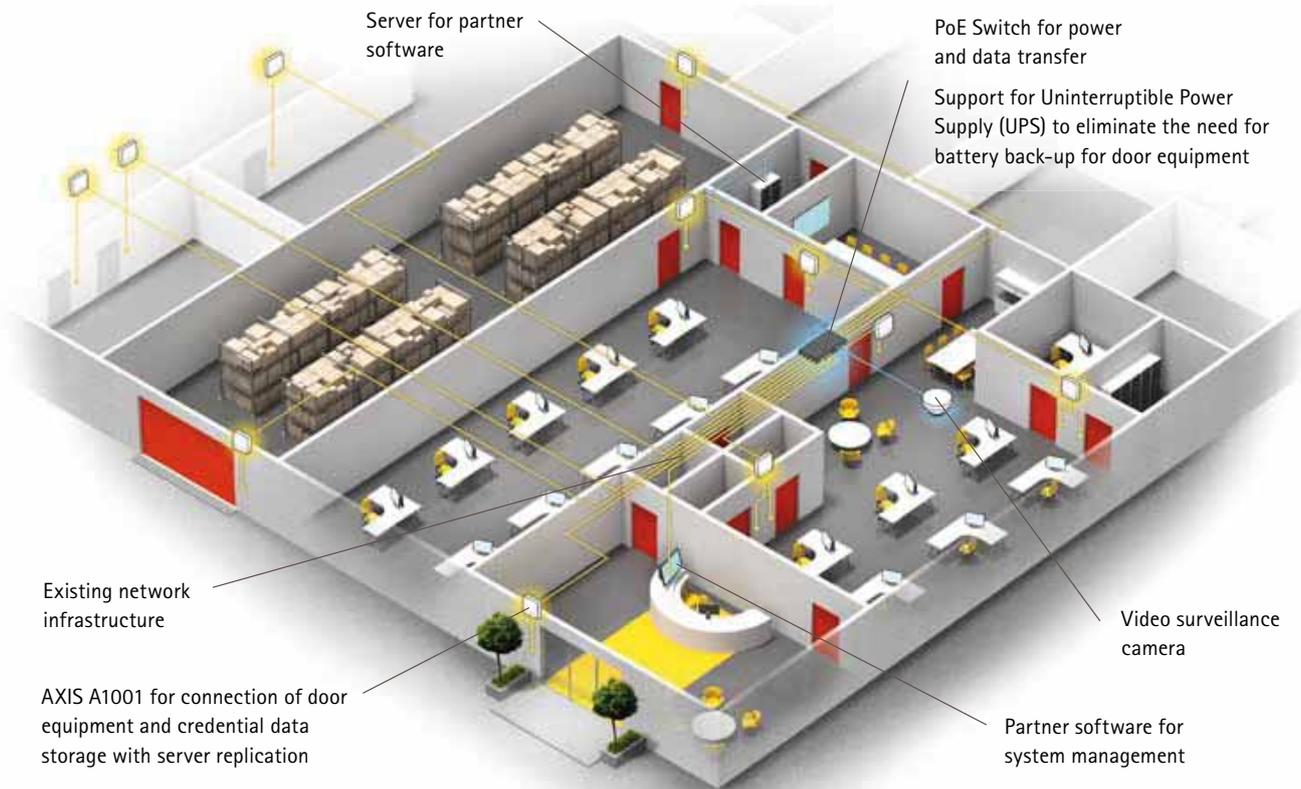
### Axis' partners ensure best-of-breed solutions

#### More advanced security requirements

- > Improve security with video verification for door entry
- > Gain more efficient surveillance by recording video at: door forced open, invalid card and door entry

#### Take advantage of other functions, such as:

- > Global anti-passback
- > Global denied access counter
- > Integration to other systems such as intrusion detection, heating and ventilation, HR systems, etc.



## Flexibility to meet tomorrow's demands

Axis' open philosophy has redefined versatility, simplicity, and scalability for video surveillance. Now, with AXIS A1001, physical access control is poised for a similar transformation.

We're committed to helping you build a simpler, smarter physical access control system for both where you are today and where you want to be tomorrow. With IP, the

possibilities are boundless. Now, we're opening the door to a new era in physical access control.



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