

ACTi

Physical Security End-to-End Solution Provider

White Paper | High Zoom Cameras

HIGH ZOOM CAMERAS

A practical white paper for long-distance monitoring, detail verification, and AI-enabled security operations

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Document purpose

This white paper explains the value of high zoom cameras for professional security projects and positions ACTi high zoom cameras as part of an integrated video surveillance ecosystem. It is written for system integrators, consultants, security managers, facility managers, and procurement teams.

1. Executive Summary

High zoom cameras extend the practical reach of video surveillance by allowing operators to observe a wide area and then capture closer details from long distances. Instead of relying only on camera placement near the target, high zoom surveillance uses optical magnification, auto focus, high-resolution imaging, low-light enhancement, infrared illumination, and video management integration to support remote verification and faster response.

For end users, the value is operational: fewer blind spots, stronger long-distance situational awareness, and better evidence when incidents occur in large or high-risk environments. For system integrators and consultants, high zoom cameras create higher-value design options for transportation, utilities, stadiums, government facilities, industrial sites, ports, logistics yards, and perimeter security projects.

ACTi positions its high zoom portfolio as a broad range of domes, bullets, and box-type cameras with various zoom ratios. ACTi states that the portfolio includes true auto focus, optical zoom up to 60x, resolution up to 20MP, infrared distance up to 250 meters, up to 120 fps under 2MP mode, high zoom PTZ options, built-in analytics, people and vehicle detection/classification/recognition, and compliance options such as NDAA and TAICS. [1]

Core message

High zoom cameras should not be evaluated only by the zoom ratio. They should be evaluated as a distance-to-detail system: observe the scene, zoom into the target, focus accurately, verify the event, record evidence, and support an operator response workflow.

Key takeaways

- Optical zoom is the primary value driver because it captures detail through the lens before the image is encoded or digitally enlarged.
- Auto focus is critical in real operations because operators must be able to zoom quickly without losing usable evidence.
- High zoom is most valuable when combined with PTZ control, IR, WDR, low-light sensitivity, high frame rate, and AI event detection.
- System design must confirm target distance, target size, field of view, mounting height, lighting, network bandwidth, storage, and VMS/NVR integration.
- The strongest deployments connect zoom operation to an event workflow: detect, zoom, verify, record, notify, and respond.

Procurement principle

Do not specify high zoom only as “more magnification.” Specify the operational outcome: what detail must be captured, at what distance, under what lighting conditions, and how the operator should respond.

2. About ACTi Corporation

ACTi Corporation is the writer and publisher of this document. ACTi is a Taiwan-based international company founded in 2003 and serving customers in more than 100 countries. ACTi states that it has more than 20 years of security-industry experience and has been a pioneer in video-based security technology development and innovation. [2]

ACTi positions itself as a physical security end-to-end solution provider. Its ecosystem includes IP cameras, analog cameras, network video recorders, hybrid DVR, VMS software, workstation applications, web clients, access control, central management, system health management, and integration with third-party systems. This matters for high zoom projects because long-distance visual detail becomes more valuable when it can be recorded, searched, escalated, and managed from one security workflow.

ACTi also emphasizes AI-enabled security. ACTi describes its AI technology as supporting detection, tracking, counting, classification, recognition, and identification of people, faces, vehicles, license plates, and other objects. High zoom cameras can therefore be planned not only as visual devices, but also as part of a broader intelligent security architecture. [2]

Why ACTi is relevant to high zoom camera projects

ACTi strength	Project relevance
End-to-end system scope	High zoom cameras can be planned together with NVR/VMS, CMS, clients, access control, alarms, and third-party systems instead of being treated as isolated devices.
Security-industry experience	ACTi corporate information states more than 20 years of experience and adoption across vertical-market requirements. [2]
AI and metadata direction	Zoom-based verification becomes more actionable when linked with AI analytics, event metadata, and control center workflows.
Integrator-friendly portfolio	Multiple form factors help system integrators match field-of-view, distance, mounting, budget, and environmental requirements.

3. Definition of "High Zoom Cameras"

A high zoom camera is a video surveillance camera designed to capture usable close-up detail from a farther distance than a standard fixed-lens camera. The key mechanism is optical zoom: the lens changes focal length so the camera can narrow its field of view and magnify distant targets before the image is digitized and encoded.

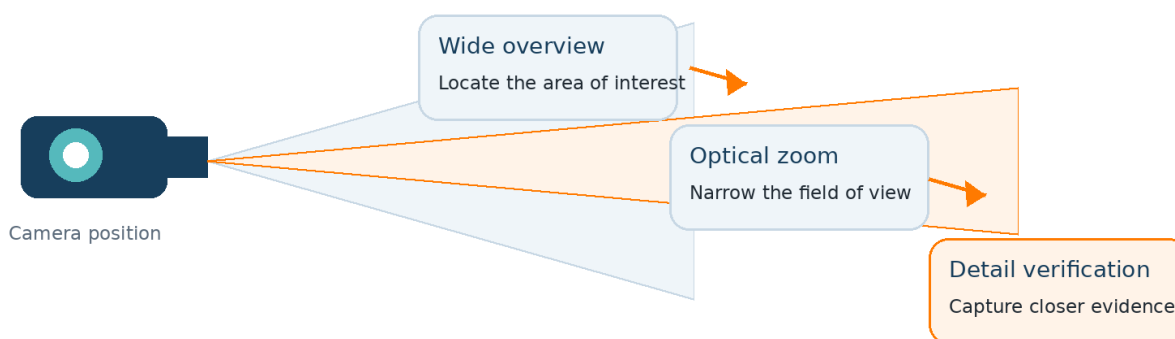
In professional surveillance, "high zoom" is not a single fixed specification. It is a project category that combines optical zoom ratio, focal length range, sensor resolution, auto focus performance, low-light capability, IR distance, WDR performance, PTZ control, AI analytics, and VMS/NVR integration. ACTi describes high zoom cameras as including dome, bullet, and box types with various zoom ratios, true auto focus, and flexible zoom/focus management through automatic, manual, or event-triggered operation. [1]

High zoom vs. related camera concepts

Term	Meaning	Common misunderstanding
Optical zoom	Magnification created by the lens before image processing.	It is not the same as digital zoom. Optical zoom preserves usable scene detail more effectively.
Digital zoom	Software enlargement of an existing image.	It can help viewing convenience but cannot create detail that the sensor did not capture.
High resolution	More pixels in the image sensor and video stream.	Resolution helps, but without suitable lens reach, the target may still occupy too few pixels.
PTZ	Pan, tilt, and zoom control for moving the camera view.	A PTZ camera may or may not have high zoom. High zoom can also exist in box or bullet form factors.
Auto focus	Automatic adjustment that keeps the image sharp after zooming.	High zoom without reliable focus can create unusable close-up images.

Visual concept

How high zoom changes surveillance value



4. Core Technical Concepts

High zoom camera selection should combine optical, imaging, environmental, network, and operational factors. The following concepts help procurement teams compare products accurately and avoid under-designed long-distance surveillance systems.

Concept	Practical meaning
Optical zoom ratio	Indicates the lens magnification range. ACTi's high zoom camera page states optical zoom up to 60x across the portfolio. [1]
Focal length and field of view	Longer focal length narrows the field of view and increases target detail, while shorter focal length provides situational overview.
Auto focus	Automatically restores sharpness after zoom changes. ACTi states that every high zoom model is equipped with true auto focus. [1]
Resolution and pixels on target	Higher resolution helps when the target must be recognized or verified, but it must be matched with lens reach and distance.
IR distance and low-light sensitivity	Support night operations and low-light scenes. ACTi lists IR distance up to 250 meters for the high zoom portfolio. [1]
WDR / strong backlight handling	Wide Dynamic Range helps maintain visibility when bright and dark regions appear in the same scene.
Frame rate	Higher frame rate improves motion review and tracking. ACTi lists up to 120 fps under 2MP mode. [1]
PTZ control and presets	PTZ models and pan-tilt installations allow operators to scan, patrol, and investigate multiple areas from one position.
AI analytics	People and vehicle detection, classification, and recognition can help turn long-distance video into actionable events. [1]
Compliance and environment	Outdoor, anti-corrosion, anti-explosion, cybersecurity, and compliance requirements should be confirmed for each project.

Specification interpretation

A single specification rarely determines real-world performance. A camera with high zoom but weak focus may not produce useful evidence. A high-resolution sensor without enough optical reach may still show distant targets too small. A long IR distance may not guarantee identification-quality detail. Site design should validate target size, distance, lighting, motion speed, mounting angle, expected operator action, and required evidence quality.

Procurement warning

Do not compare high zoom cameras only by “x” zoom ratio. Compare the full evidence chain: lens reach, focus, sensor, low-light performance, WDR, IR, analytics, PTZ control, recording, and operator workflow.

5. High-Value Applications

ACTi describes high zoom cameras as suitable for mission-critical areas where cameras must capture close-up details from long distances, including airports, train stations, stadiums, and utilities. [1] These examples can be expanded into broader security applications where remote detail verification is more practical than installing many close-range cameras.

Application	Operational value	Typical locations
Transportation monitoring	Verify incidents at platforms, tracks, roads, gates, and waiting areas without moving operators physically to the scene.	Train stations, airports, bus terminals, traffic corridors, bridges
Critical infrastructure protection	Support long-distance monitoring of restricted assets and provide closer evidence during alarms.	Utilities, substations, water facilities, telecom sites, energy facilities
Perimeter and border observation	Observe wide outdoor boundaries and zoom into suspicious people, vehicles, or activities.	Fences, yards, ports, borders, military sites, logistics parks
Large public venue security	Maintain overview of crowds while enabling detail verification of incidents or restricted-area violations.	Stadiums, arenas, parks, squares, campuses
Industrial and logistics operations	Verify activities across large yards, loading bays, and production areas from central control points.	Factories, warehouses, loading docks, container yards
Parking and traffic enforcement	Observe vehicle movement and zoom into incident details where camera installation points are limited.	Parking lots, parking structures, toll areas, intersections

Value by stakeholder

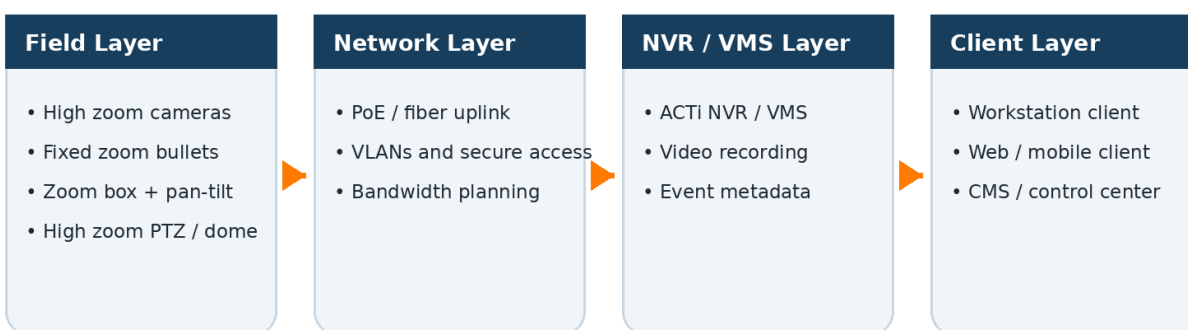
Stakeholder	Main benefit
Security manager	Stronger long-distance situational awareness and faster verification of suspicious activity.
Control room operator	Ability to move from overview to detail without relying only on fixed nearby cameras.
Facility / operations manager	Better visibility over large assets, yards, process areas, and remote locations.
System integrator	Higher-value solution design opportunities beyond standard fixed camera replacement.
Consultant / procurement team	Clearer specification language for distance, target detail, evidence quality, and response workflow.

6. System Architecture

From an NVR or VMS perspective, high zoom cameras should be treated as part of a complete operational architecture. The camera captures the video stream and may also generate analytics events. The recording platform stores evidence, operators use clients or control center systems to view and control the camera, and security procedures define how to respond.

High zoom value increases when it is connected to PTZ commands, presets, patrols, event triggers, map views, event search, remote clients, and centralized monitoring. ACTi's high zoom page notes that zoom box units mounted on pan-tilt scanners can function as full PTZ high zoom security cameras and can be controlled through ACTi VMS. [1]

Reference system architecture



Video streams, PTZ commands, AI events, alarm metadata, and recorded evidence move through the architecture.

Design principle: capture details at distance, verify incidents, preserve evidence, and guide the operator response.

Architecture layers

Layer	Role in high zoom surveillance
Field layer	High zoom bullet cameras, zoom box cameras, zoom domes, high zoom PTZ/speed dome cameras, pan-tilt scanners, alarms, and adjacent overview cameras.
Network layer	PoE switches, fiber/uplink infrastructure, VLAN segmentation, cybersecurity controls, bandwidth planning, and remote access policy.
Recording layer	NVR/VMS receives video streams, PTZ commands, event triggers, snapshots, and metadata; stores searchable evidence.
Management layer	CMS/control center aggregates live view, events, maps, TV wall views, and multi-site response workflows.
Response layer	Operator SOPs, guard dispatch, escalation, alarm outputs, access control action, third-party integration, and reporting.

7. ACTi Product Portfolio Overview

ACTi's high zoom camera page positions the portfolio as one of the industry's broad ranges of high zoom cameras, including dome, bullet, and box types with various zoom ratios. The page highlights true auto focus, multiple ways to manage zoom and focus, VMS control for zoom box units mounted on pan-tilt scanners, high-resolution sensors, extended IR distance, low-light sensitivity, WDR, and analytics. [1]

Portfolio categories

Category	Where it fits	Use-case fit
Zoom box cameras	Flexible camera body for indoor/outdoor design, often paired with lens/housing or pan-tilt scanner configurations.	Long-distance monitoring, specialized mounting, and projects needing flexible enclosure or scanner integration.
High zoom bullet cameras	Outdoor fixed-view or remotely adjustable monitoring where a robust form factor is preferred.	Perimeters, yards, roads, loading areas, utilities, and site entrances.
High zoom dome cameras	Compact dome form factor for locations where appearance and installation profile matter.	Building exteriors, campuses, public areas, and mid-range verification points.
High zoom PTZ / speed dome cameras	Movable camera platform for pan, tilt, zoom, preset, patrol, and operator-controlled investigation.	Transportation, stadiums, public areas, parking lots, and wide-area surveillance.
Pan-tilt scanner with zoom camera	High zoom box camera mounted on a scanner to create a full PTZ-like long-distance solution.	Critical infrastructure, coastline/port areas, industrial yards, and perimeter scanning.
Specialized rugged options	Anti-corrosion, anti-explosion, and high-resolution variants depending on regional availability and project requirements.	Harsh environments, industrial facilities, chemical sites, coastal areas, and regulated projects.

Portfolio-level capabilities to confirm

- Required zoom ratio and actual target detail at the maximum required distance.
- Whether the project needs fixed zoom, remote zoom/focus, full PTZ control, or pan-tilt scanner integration.
- Resolution, frame rate, IR distance, WDR, low-light sensitivity, and video compression requirements.
- AI analytics support, event types, object classification needs, and VMS/NVR event integration.
- Environmental ratings, operating temperature, corrosion resistance, explosion-related requirements, and mounting accessories.
- Cybersecurity and compliance requirements such as NDAA, TAICS, account control, firmware update policy, and secure protocols.

Project note

Product availability, detailed specifications, analytics support, compliance status, and regional part numbers should be confirmed from the latest ACTi product pages, datasheets, firmware release notes, and quotation documents before project submission.

8. Related Keywords and Terminology

The following keyword reference groups collect common terms related to high zoom cameras, long-distance surveillance, PTZ monitoring, optical zoom, AI analytics, security operations, and project procurement.

Core topic keywords

high zoom cameras, high zoom surveillance camera, optical zoom camera, long range surveillance camera, long distance security camera, zoom security camera, high zoom IP camera, remote monitoring camera, high magnification camera, professional surveillance camera, outdoor zoom camera, long distance video surveillance, close-up security verification

Form factor keywords

zoom bullet camera, zoom box camera, zoom dome camera, high zoom PTZ camera, high zoom speed dome, PTZ zoom camera, outdoor PTZ camera, pan tilt zoom security camera, pan tilt scanner camera, rugged zoom camera, anti-corrosion surveillance camera, anti-explosion camera, fixed zoom camera, remote zoom camera

Technical specification keywords

60x optical zoom camera, optical zoom vs digital zoom, true auto focus camera, auto focus surveillance camera, 20MP security camera, 250m IR camera, WDR surveillance camera, low light security camera, high frame rate camera, 120fps security camera, long focal length camera, field of view camera, pixels per meter, target detail at distance

Application keywords

airport surveillance camera, train station surveillance camera, stadium security camera, utility site surveillance, critical infrastructure camera, perimeter surveillance camera, port security camera, logistics yard camera, industrial site surveillance, campus long range monitoring, parking lot zoom camera, traffic monitoring camera, border surveillance camera, military site surveillance

AI and VMS keywords

AI high zoom camera, people detection camera, vehicle detection camera, object classification camera, video analytics camera, PTZ auto tracking camera, event trigger zoom camera, VMS PTZ control, NVR zoom camera integration, central management surveillance, video metadata, event search, alarm verification, remote security client

Procurement and project keywords

best high zoom surveillance camera, high zoom camera for system integrators, high zoom camera for consultants, high zoom camera for end users, high zoom camera specification, long range camera procurement, camera selection for perimeter security, ACTi high zoom camera, ACTi zoom bullet camera, ACTi high zoom PTZ, ACTi zoom box camera, high zoom camera white paper

Common question phrases

what is a high zoom camera, how does optical zoom work in surveillance, optical zoom vs digital zoom for security cameras, how far can a high zoom camera see, how to choose a high zoom camera, when should I use a PTZ camera, what zoom ratio is needed for perimeter security, how to specify long-distance surveillance cameras, how to reduce blind spots in large sites

Source notes

This white paper is based on ACTi public source pages and general video surveillance system-design practices. Product details should always be reconfirmed against the latest ACTi datasheets, firmware release notes, regional availability, and quotation documents before formal project commitment.

Ref.	Source
[1]	ACTi Corporation, "High Zoom Cameras," official product category page. URL: https://www.acti.com/products/high-zoom-cameras . Accessed: May 15, 2026.
[2]	ACTi Corporation, "About ACTi," official corporate page. URL: https://www.acti.com/corporate/about . Accessed: May 15, 2026.

Revision note: This document is a marketing and technical education white paper. It is not a regulatory certification, safety standard, or final project design. Always validate zoom performance, evidence quality, and operator workflow in the target scene before deployment.

Prepared by ACTi Corporation

For high zoom camera projects, confirm camera type selection, zoom requirements, analytics capability, system integration, mounting accessories, and regional availability with your ACTi sales contact or authorized system integrator.
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