ACTi

Physical Security End-to-End Solution Provider

White Paper | ColorGuard

COLORGUARD

True-color night surveillance for AI-assisted monitoring, search, and operator verification

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Version 1.0 | May 2026

Contents

Document purpose

This white paper explains the value of ColorGuard for professional security projects and positions ACTi true-color low-light 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

ColorGuard is ACTi's true-color surveillance concept for low-light and night-time security. Instead of treating night video only as a monochrome IR image, ColorGuard preserves color details so operators and AI analytics can use appearance evidence such as clothing color, vehicle color, object color, and scene context.

The technology combines multiple camera-side capabilities: ColorVizion low-light imaging, built-in white LED illumination, advanced image signal processing, wide dynamic range processing, and AI-based color security surveillance. ACTi describes ColorGuard as a set of multiple technologies combined to form a fully automatic protection shield using colored images. [1]

For end users, the strategic value is faster and more confident verification after an alarm. For consultants, it gives a clearer way to specify night-time evidence quality, not only minimum illumination. For system integrators, it supports higher-value solutions because the camera is not just recording video; it is providing searchable color evidence and AI-assisted event context.

Core message

ColorGuard should be evaluated as an evidence and response technology: capture true-color video, preserve details under challenging lighting, allow AI to analyze appearance, notify operators, and retain useful evidence for investigation.

Key takeaways

- Color evidence is operationally valuable for tracking people, vehicles, and objects across multiple locations.
- White LED illumination preserves visible-spectrum color, while IR-only night vision usually produces monochrome evidence.
- Wide dynamic range is important because night scenes often combine dark backgrounds with headlights, entrance lights, reflective surfaces, and signage.
- AI analytics can make better appearance-based decisions when the input video keeps true color information.
- Deployment quality matters: light direction, rule zones, camera height, lens choice, privacy settings, network design, and operator SOPs determine the final result.

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 positions itself as a physical security end-to-end solution provider. [2]

ACTi's portfolio covers video surveillance, access control, control center operation, system management, and integration with third-party systems. Its official corporate materials describe products and solutions including IP cameras, analog cameras, network video recorders, hybrid DVR, software and standalone VMS options, workstation applications, web clients, access control systems, central management, system health management, and third-party integration. [2]

ACTi also emphasizes AI-enabled security. Its AI solution platform supports detection, tracking, counting, classification, recognition, and identification of people, faces, vehicles, license plates, and other object types. For ColorGuard projects, this matters because color-preserved video becomes more useful when it can be recorded, searched, verified, escalated, and connected to a response workflow. [2]

Why ACTi is relevant to ColorGuard projects

ACTi strength	Project relevance
End-to-end system scope	ColorGuard cameras can be planned together with VMS, NVR, central monitoring, access control, alarms, and third-party systems instead of being treated as isolated devices.
Security-industry experience	ACTi's corporate materials state more than 20 years of security-industry experience and adoption across vertical markets. [2]
AI and metadata direction	Color-preserved video supports appearance-based analytics, faster operator verification, and more meaningful incident evidence.
Integrator-friendly portfolio	Multiple camera form factors allow system integrators to match true-color surveillance to different sites, distances, budgets, and mounting conditions.

3. What ColorGuard Means

ColorGuard means applying camera-side imaging, illumination, WDR, and AI technologies so security video remains useful in color during night-time or low-light operation. ACTi explains that ColorGuard combines ColorVizion, white LED illumination, artificial intelligence, and strong WDR to preserve true colors and support AI-powered physical security surveillance. [1]

This is different from simply adding light to a scene. The goal is not only brightness; the goal is usable color evidence. A person wearing a red jacket, a vehicle with a dark body color, or a suspect moving through several entrances can be easier to verify when the surveillance system retains color information across the workflow.

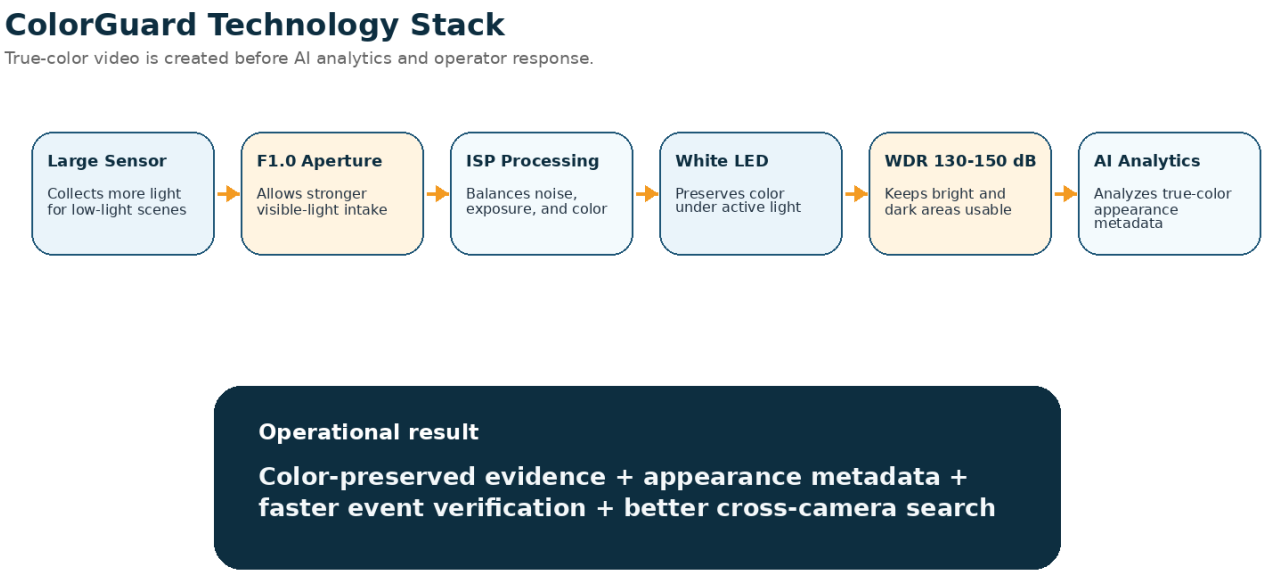
In practical terms, ColorGuard shifts night surveillance from “detect that something moved” toward “understand what appeared, where it moved, what it looked like, and how operators should respond.”

ColorGuard vs. conventional night surveillance

Dimension	Conventional IR night surveillance	ColorGuard surveillance
Primary night signal	Infrared illumination and camera sensitivity; evidence is often monochrome.	Visible-spectrum color imaging supported by low-light optics, white LED, WDR, and ISP processing.
Evidence value	Strong for shape and motion, but color details may be missing.	Preserves color evidence such as clothing, vehicle, object, and scene details.
AI input quality	Object detection may work, but appearance-based metadata can be limited.	AI can analyze true-color frames and create more useful appearance metadata.
Operator verification	Operators may need extra cameras, lights, or manual confirmation.	Operators can verify incidents faster because the video contains more human-readable context.
Best combined use	Useful where covert or non-visible illumination is preferred.	Useful where deterrence, visible evidence, and color-based investigation are important.

4. Core Technical Concepts

ColorGuard decisions should be made from both an imaging-performance perspective and an operational security perspective. The concepts below help project teams compare products accurately and avoid under-designed low-light deployments.



Concept	Practical meaning
ColorVizion	ACTi describes ColorVizion as the component that makes night-time images appear in true colors by combining a large sensor, good lens, and image processing. [1]
Large sensor and lens	More light intake helps the camera preserve color and reduce noise when the scene has limited visible light.
F1.0 aperture	A wide aperture can support stronger low-light image capture by allowing more light to reach the sensor. ACTi lists F1.0 aperture among ColorGuard features. [1]
White LED support	Visible-spectrum illumination helps preserve true colors, unlike IR illumination that commonly produces monochrome night images. ACTi identifies white LED support as a ColorGuard component. [1]
WDR 130-150 dB	Wide dynamic range helps preserve detail when bright and dark areas appear in the same scene, such as entrances, parking areas, gates, and roads. ACTi identifies 130-150 dB WDR on the ColorGuard page. [1]
AI-based color surveillance	AI can analyze color-preserved frames and appearance metadata such as jacket color, pants color, hair color, and vehicle color. [1]

5. High-Value Applications

ACTi identifies ColorGuard applications around AI-powered physical security surveillance using true colors and appearance metadata. The strongest projects are those where color evidence materially improves alarm verification, search, deterrence, or investigation. [1]

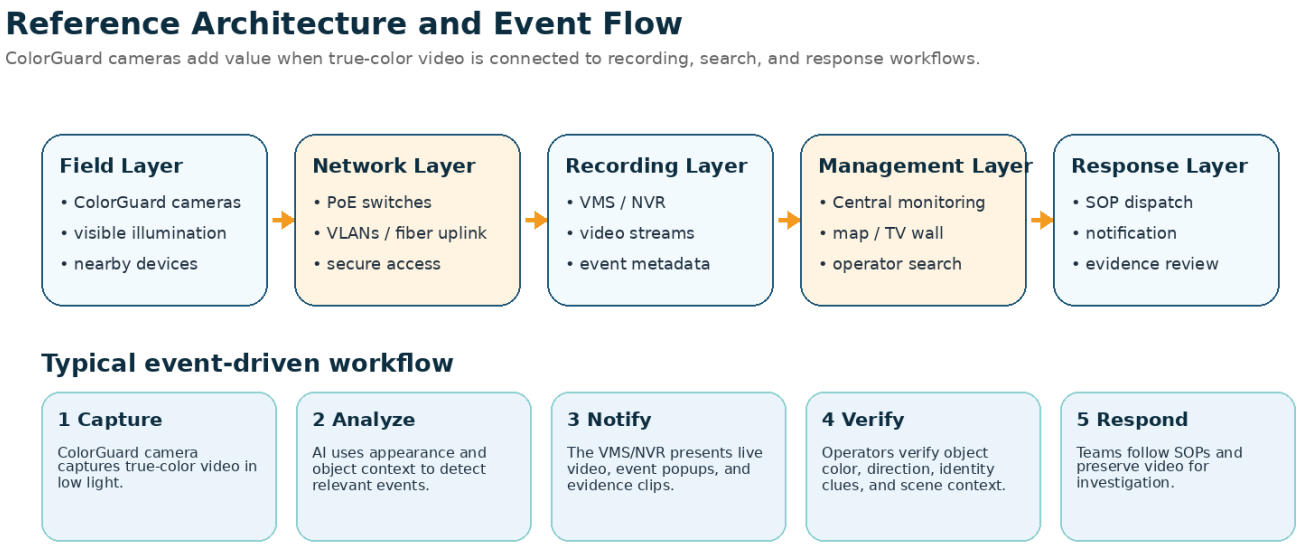
Application	Operational value	Typical locations
Night intrusion verification	Preserve clothing color, object color, and direction of travel after an alarm.	Perimeters, entrances, fence lines, campuses, warehouses, yards.
Suspect tracking across zones	Use appearance clues to identify the same person through different locations.	Schools, government buildings, factories, logistics facilities, public venues.
Vehicle color evidence	Retain vehicle color and appearance clues for investigation and search.	Parking lots, driveways, gates, loading docks, roads, transportation sites.
AI-assisted event review	Improve the usefulness of object metadata and visual evidence for operator decision-making.	Control rooms, multi-site monitoring centers, critical facilities.
Deterrence with visible light	White LED illumination can signal active monitoring and discourage unwanted behavior.	Building exteriors, courtyards, back doors, service areas, restricted zones.
Post-incident investigation	Provide color-rich clips and snapshots that are easier for operators and stakeholders to interpret.	Retail, campuses, factories, government facilities, logistics sites.

Value by stakeholder

Stakeholder	Main benefit
Security manager	Better night-time evidence, fewer ambiguous incidents, and faster verification.
Control room operator	Color-rich video helps operators understand the incident without relying only on shape or motion.
System integrator	Creates a higher-value solution conversation beyond standard camera replacement.
Consultant	Provides a practical specification language for night-time color evidence and AI-assisted monitoring.
Procurement team	A well-scoped ColorGuard system can improve risk reduction and investigation value without overcomplicating the project.

6. System Architecture

Since ColorGuard technology is inside the camera, the system value can extend to any VMS or recording platform that receives the camera video stream. ACTi notes that VMS and NVR products can benefit from the clear colored images produced by ColorGuard cameras. [1]



Integration principle

ColorGuard creates value when it is connected to a workflow.

A camera that captures clear color video is useful; a camera that captures clear color video, sends events, stores evidence, enables search, and guides operator action becomes a solution.

7. ACTi Product Portfolio Overview

ACTi positions ColorGuard across true-color, low-light camera types and related recording or management platforms. This section intentionally describes product categories and form factors rather than specific model names, so the document remains stable as the portfolio evolves.

Portfolio categories

Category	Where it fits
Fixed bullet cameras	Outdoor fixed-view monitoring for entrances, yards, perimeters, loading zones, parking areas, and building exteriors.
Outdoor turret cameras	Compact fixed-view installations where flexible mounting angle and low-profile appearance are preferred.
Fixed dome cameras	Indoor or sheltered installations where vandal resistance, appearance, or ceiling mounting is important.
Multi-sensor cameras	Wide-area color monitoring where a broader field of view helps reduce blind spots.
PTZ / speed dome cameras	Movable surveillance with optical zoom for patrol routes, wide-area monitoring, and operator-controlled investigation.
Positioning systems	Long-range rugged aiming platforms for large outdoor sites and critical infrastructure.
VMS, NVR, and central management	Recording, search, event handling, multi-site monitoring, TV wall operation, and evidence management.

Product planning note

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

Stable specification approach

For tenders and consultant specifications, define the required result: true-color low-light video, white LED support, WDR performance, AI-based color surveillance, event integration, evidence retention, cybersecurity controls, and acceptance-test criteria.

8. Deployment and Procurement Guidance

ColorGuard projects are most successful when site design begins with the evidence requirement rather than a camera model. A parking-lot project, a school entrance project, and a perimeter project may all need color video, but their mounting height, lens, LED behavior, WDR exposure, network design, and operator workflow can be very different.

Design questions before selecting a camera

- What must be identified or verified at night: person, clothing color, vehicle color, direction, object type, behavior, or license-plate context?
- What is the maximum distance from camera to target, and how large must the target appear in the image?
- Is white LED illumination acceptable for the site, or are there policy, glare, privacy, or neighborhood constraints?
- What lighting challenges exist: headlights, reflective surfaces, dark entrances, shadowed walkways, backlight, rain, fog, dust, or seasonal changes?
- Will operators use live view, event popups, map views, search tools, exported clips, or third-party alerts?
- What response action should happen after an alarm: guard dispatch, voice warning, access control action, email, VMS popup, CMS event, or escalation?
- What cybersecurity, privacy, retention, and audit requirements must be applied to video and metadata?

Procurement specification checklist

Procurement item	What to define
Evidence objective	Specify the required color evidence and operator decision, not only resolution or minimum illumination.
Low-light performance	Define sensor class, aperture, color mode expectations, scene lighting assumptions, and acceptance-test conditions.
Illumination behavior	Define white LED range, trigger logic, deterrence requirement, glare tolerance, and site restrictions.
WDR requirement	Define mixed-light scenes that must remain usable, such as entrances, gates, parking lots, roads, and backlit corridors.
AI and metadata	Confirm object types, appearance metadata, search needs, event rules, firmware support, and VMS/NVR behavior.
Integration	Confirm video streams, event triggers, metadata, alarm actions, third-party integration, and export workflow.
Acceptance testing	Define target objects, clothing/vehicle colors, distance, lighting, alarm latency, and pass/fail documentation.

9. Operational Best Practices

ColorGuard is an operational system, not only a device feature. The camera must be installed, configured, validated, monitored, and maintained in a way that matches the user's risk profile and evidence requirements.

Configuration and alarm tuning

- Create separate rule profiles for entrances, fence lines, parking zones, loading docks, building perimeters, and restricted areas.
- Set image and LED behavior based on the real site. Avoid relying only on factory defaults when lighting is complex.
- Avoid placing key detection zones directly over reflective surfaces, moving headlights, bright signage, exhaust vents, or uncontrolled light sources unless the design accounts for them.
- Use schedule-based rules where risk and lighting conditions change by time of day, work shift, or site operating status.
- Combine ColorGuard alarms with VMS/CMS layouts, maps, snapshots, event clips, and SOP instructions so operators know exactly what to do.
- Document the meaning of each alarm and the expected response action for guards, supervisors, facility managers, and investigation teams.

Maintenance and governance

Practice	Reason
Periodic night testing	Validate true-color performance under real lighting, weather, and operating conditions.
Lens and housing cleaning	Dirt, water spots, insects, spider webs, or obstruction can reduce image quality and trigger unnecessary alarms.
Firmware control	Maintain firmware versions, release notes, update approvals, rollback plans, and cybersecurity review.
Operator training	Train operators to use color evidence correctly and avoid over-interpreting uncertain details.
Evidence review	Confirm that event clips, snapshots, timestamps, video streams, and metadata are retained as required.
Continuous improvement	Review false alarms, missed events, seasonal lighting changes, and response time metrics to refine configuration.

10. Evaluation Checklist

Use the following checklist during site survey, proof-of-concept testing, tender preparation, or project handover. It is intentionally practical and can be adapted into an internal worksheet.

Area	Acceptance question	Done
Business objective	Risk, evidence requirement, and use case are clearly defined.	☐
Site survey	Distances, mounting points, lighting sources, blind spots, glare, and environmental conditions are documented.	☐
Target definition	Target type, size, speed, clothing/vehicle color, and required confidence are defined.	☐
Camera selection	Form factor, lens/FOV, low-light performance, WDR, LED support, and environmental rating are selected.	☐
Image quality	Night color, exposure, noise level, motion blur, and mixed-light detail are validated on site.	☐
AI / metadata	Required object detection, appearance metadata, and event behavior are confirmed for the chosen firmware and configuration.	☐
VMS / NVR integration	Video streams, event triggers, snapshots, search, export, and alarm actions are tested.	☐
Cybersecurity	Accounts, passwords, network segmentation, update process, and secure access are reviewed.	☐
Acceptance test	Pass/fail criteria, target objects, distances, lighting conditions, alarm latency, and documentation are agreed.	☐
Operations	SOP, escalation path, training, maintenance, and reporting are completed.	☐

Suggested POC success metrics

- Night-time color usability for agreed target types and distances.
- False alarm rate under normal night operating conditions.
- Alarm latency from camera event to VMS/CMS operator notification.
- Quality of color evidence in live view, snapshots, and exported clips.
- Operator response time and action completion rate.
- Evidence completeness: timestamp, event clip, appearance details, metadata, and operator notes.

11. Related Keywords and Terminology

The following keyword reference groups collect common terms related to ColorGuard, true-color night surveillance, low-light imaging, AI-based monitoring, and video security operations.

Core ColorGuard keywords

ColorGuard, ColorGuard camera, ColorGuard surveillance, true color surveillance, true color night vision, color night vision camera, AI color surveillance, color security camera, low light color camera, night time color surveillance, full color surveillance camera, visible light security camera, white LED security camera, ACTi ColorGuard, ACTi true color camera, ColorVizion camera

Low-light imaging keywords

low light surveillance, extreme low light camera, color low light imaging, large sensor security camera, F1.0 aperture camera, image signal processor camera, ISP low light processing, wide dynamic range surveillance, WDR 130dB camera, WDR 150dB camera, mixed lighting surveillance, backlight compensation security camera, night color evidence, visible spectrum illumination

AI and metadata keywords

AI video analytics, AI security camera, AI-based color surveillance, appearance metadata, clothing color metadata, vehicle color metadata, object color detection, people detection camera, vehicle detection camera, AI intrusion detection, AI event detection, video metadata search, color-based video search, smart event verification, deep learning surveillance camera

Security and investigation keywords

night intrusion verification, color evidence camera, suspect tracking camera, cross camera suspect search, vehicle color evidence, parking lot security camera, perimeter security camera, fence line detection camera, entrance security camera, loading dock surveillance, after-hours monitoring, security event verification, post incident investigation, forensic video evidence

11. Related Keywords and Terminology

Vertical-market keywords

campus night surveillance, school security camera, government facility surveillance, factory security camera, warehouse night surveillance, logistics yard surveillance, parking lot color camera, public area surveillance, transportation security camera, retail exterior surveillance, critical facility surveillance, industrial site security, office building security camera, hotel perimeter camera, community security camera

System architecture keywords

VMS integration, NVR integration, central monitoring system, multi-site monitoring, TV wall monitoring, event-driven surveillance, video alarm workflow, operator verification workflow, security SOP integration, event metadata management, video evidence retention, PoE surveillance network, VLAN surveillance network, secure camera network, video stream recording

Procurement and project keywords

best color night vision camera, true color camera for perimeter security, color security camera for parking lot, camera for night evidence, camera for clothing color identification, camera for vehicle color identification, low light camera for system integrators, AI camera for consultants, night surveillance acceptance testing, camera specification checklist, ColorGuard white paper, low light surveillance white paper, video surveillance procurement guide

Common question phrases

what is ColorGuard, how does ColorGuard work, what is true color night vision, ColorGuard vs IR night vision, why use white LED security cameras, how to capture color video at night, how to improve night surveillance evidence, how to choose a low light security camera, how to reduce false alarms at night, what is WDR in surveillance cameras, what is appearance metadata, how can AI use clothing color in video search

Additional related terms

color-preserved video, active visible illumination, smart white LED camera, night-time operator verification, low-light scene optimization, mixed-light security video, appearance-based investigation, incident evidence workflow, alarm verification camera, security camera deployment planning, VMS search and export, AI-assisted monitoring, color video analytics, night-time deterrence camera, security risk reduction

12. Source Notes

This white paper is based on ACTi public source pages, the supplied ACTi white paper layout reference, 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, “ColorGuard,” official technology page. URL: https://www.acti.com/technologies/colorguard. Accessed: May 13, 2026.
[2]	ACTi Corporation, “About ACTi,” official corporate page. URL: https://www.acti.com/corporate. Accessed: May 13, 2026.
[3]	ACTi Corporation, “Thermal Surveillance White Paper,” supplied as layout and structure reference by the requester. Used for document consistency, not as the technical source for ColorGuard content.

Revision note

This document is a marketing and technical education white paper. It is not a regulatory certification, safety standard, final project design, or guarantee of detection performance. Always validate image quality, analytics behavior, and operator workflow in the target scene before deployment.

Prepared by ACTi Corporation

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

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