

UNIONE

UNIONE TRADING All-Weather Video Enhancer



Clearer
/
Brighter
/
Sharper



This highlights the need for a Full-HD Video Enhancer



Abnormal weather patterns caused by global warming are rapidly increasing worldwide, creating more frequent and unpredictable low-visibility conditions.

Heavy rain, snow, fog, air pollution, fine dust, and low-light environments inevitably degrade the video quality of conventional CCTV and drone systems.

Even premium HD cameras and AI-based analytics cannot maintain image quality in harsh weather or low-visibility situations.



With the rapid growth of UAVs, unmanned vessels, and drones, the clear imagery provided by UNIONE's Video Enhancer has become essential for surveillance, monitoring, and proactive response.

The system can be applied across land, maritime, and aerial platforms and is now considered indispensable in both public and private sectors for preventing accidents, identifying causes, and conducting post-event verification.

UNIONE's Video Enhancer secures visibility even in low-light or severe-weather conditions, strengthens threat recognition, and enhances camera performance without hardware replacement, significantly reducing costs.

Key features of the Full-HD Video Enhancer

01 Color and Resolution Restoration

Analyzes degraded color information caused by fog, rain, snow, nighttime, or low-light conditions and restores it to sharp, natural-looking color

02 Universal Camera Compatibility

Enhances imagery from not only optical cameras but also thermal and IR cameras, delivering improved clarity across diverse sensor types.

03 Enhanced Thermal Camera Performance

Improves the MRTD of thermal cameras by up to 2x, enabling better detection, recognition, and identification even when target-background temperature differences are minimal.

04 Intelligent Auto Mode

Automatically analyzes incoming video characteristics and applies the optimal enhancement settings with no operator intervention required.

05 256-Level Defog & Low-Light Filters

Equipped with 256-level defog and low-light filters to maintain optimal image quality across a wide range of environmental conditions.

Strengths of the Full-HD Video Enhancer

Performance & Efficiency

- ▶ Enhances optical, thermal, and EO-IR camera quality, greatly improving operator monitoring.
→ Significantly boosts moving-object detection and tracking, strengthening overall system surveillance
- ▶ Improves target detection, including anti-drone operations—and enhances drone control even in low-visibility conditions.



Ease of Use

- ▶ Simply connect it to the existing system, and it works instantly with a plug-and-play setup.
- ▶ Auto Mode delivers optimal image enhancement without any manual adjustments.



Stability

- ▶ It operates as a receiver that enhances incoming signals and outputs improved video without affecting the existing server.
- ▶ With power consumption under 1.0A, it generates virtually no heat, ensuring durability and stable long-term operation.



Eco-Friendly

- ▶ By upgrading existing cameras without replacement, the system extends camera lifespan and significantly reduces disposal waste.
→ One enhancer delivers the performance equivalent to replacing up to 16 cameras.



Energy & Cost Reduction

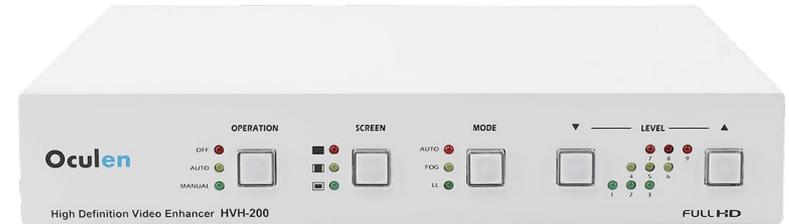
- ▶ Consumes less than 1.0A, delivering extremely low power usage.
- ▶ Supports multi-channel enhancement for up to 16 cameras, reducing camera replacement costs.



FULL HD Video Enhancer HVH-200

Specification

Type	Stand-Alone										
Video Input	HDMI (DVI is available by using adapter)										
Video Output	HDMI (DVI is available by using adapter)										
Best In/Out Resolution & Frame Rate	<table border="1"> <tr> <td>IN</td> <td>1280x720 p60 (approx. 0.92 megapixels.)</td> </tr> <tr> <td></td> <td>1360x768 p60 (approx. 1.04 megapixels.)</td> </tr> <tr> <td></td> <td>1366x768 p60 (approx. 1.05 megapixels.)</td> </tr> <tr> <td></td> <td>1920x1080 p60 (approx. 2.07 megapixels.)</td> </tr> <tr> <td>OUT</td> <td>1920x1080 p60 (approx. 2.07 megapixels.)</td> </tr> </table>	IN	1280x720 p60 (approx. 0.92 megapixels.)		1360x768 p60 (approx. 1.04 megapixels.)		1366x768 p60 (approx. 1.05 megapixels.)		1920x1080 p60 (approx. 2.07 megapixels.)	OUT	1920x1080 p60 (approx. 2.07 megapixels.)
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OUT	1920x1080 p60 (approx. 2.07 megapixels.)										
Operation temperature	0~60°C (32~140°F)										
Operation Humidity	0% ~80% (Non-condensing)										
Power Adapter	DC12V/1A (DC Adapter)										
Size	245(W) x 190(D) x 44(H) mm										
Weight	1.3 kg										
Case Material	Steel										



▲ 장비 전면



▲ 장비 후면

Comparison Data with Competing Products

	HVH-200	영국 D사	일본 R-1사	일본 R-2사
Method	FPGA	PC Software	PC Software	Dedicated CPU
EO Fog Image Enhancement	Full HD Supported	Full HD Supported	Full HD Supported	Full HD Supported
IR(thermal) Image Enhancement	MRTD Improvement	x	x	x
Fog performance -Normal Data	O	x	x	x
EO/IR Enhancement For Drone-based Cameras	EO/IR Dual Support	x	x	EO/IR Dual Support
Operating Temperature	0°C~60°C	-	0°C~55°C	0°C~55°C
Current Consumption	1A	-	2A	2A
Weight	1.3KG	-	2.2KG	2.1KG
Consumer Price	USD 5,000	USD 40,000	USD 25,000	USD 36,000

Comparison Data with Competing Products

	HVH-200	UK Company D	JPN Company R-1	JPN Company R-2
Method	FPGA	PC Software	PC Software	Dedicated CPU
EO Fog Image Enhancement	Full HD Supported	Full HD Supported	Full HD Supported	Full HD Supported
IR(thermal) Image Enhancement	MRTD Improvement	x	x	x
EO/IR Enhancement For Drone-based Cameras	EO/IR Dual Support	x	x	EO/IR Dual Support
Operating Temperature	0°C~60°C	-	0°C~55°C	0°C~55°C
Current Consumption	1A	-	2A	2A
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FULL HD Video Enhancer Installation Diagram **HVH-200**

Installed after the video storage server for various digital cameras.(CCTV, IP cameras, etc.)

▼ Field system

▼ Control center



Various Cameras



HDMI



Video server

HDMI



HVH-200 installed after the NVR in the control center

HDMI



Security/ Surveillance/ Safety/ Defense/ Monitoring

Government Infrastructure

Ports, airport runways, highways, urban intersections, underpasses, etc

National Security Facilities

Military observation posts, coastal surveillance, reconnaissance drones, military bases, etc

Core Industrial Facilities

Power plants, petrochemical & refinery plants, steel mills, etc

Large-Scale Logistics Facilities

Cargo terminals, container yards, bonded zone, etc

Shipping port Shipbuilding

Onboard and onshore ship areas, engine rooms, shipyards, etc

Natural Disaster-Prone Areas

Coastal areas, rivers, levees, retaining walls, tunnels, underpasses, etc

High-Risk/ Crime-Prone Areas

Residential alleys, parks, public parking lots, hiking trails, etc

Public Use Facilities

Ski resorts, cables car, marine attractions, night-view spots, theme parks, arboretums, observatories, etc

Production Facility Monitoring

Plant monitoring, Factory production lines, etc

Private Facilities

Factory exteriors, storage yards, building exteriors, underground parking lot, waste areas, playgrounds, etc





Actual Comparison Images **BEFORE & AFTER**

Clearer / Brighter / Sharper



UNIONE TRADING All-Weather Video Enhancer

Fog Image Enhancement Example

🔍 Fog Image Enhancement

▼ Original Example



▼ Enhanced Image



Rainy Day Image Enhancement Example

🔍 Rainy-Day Image Enhancement

▼ Original Image



▼ Enhanced Image



Heavy Snow Image Enhancement Example

🕒 Heavy Snow Image Enhancement

▼ Original Image



▼ Enhanced Image



Fine Dust & Yellow Dust Enhancement Example

🕒 Fine Dust & Yellow Dust Enhancement

▼ Original Image



▼ Enhanced Image



Low-Light/ Night Image Enhancement Example

Low-Light/ Night Image Enhancement

▼ Original Image



▼ Enhanced Image



IR Camera Image Enhancement Example

IR Camera Image Enhancement

Original Image



Enhanced Image



Thermal Camera Enhancement Example

Thermal Camera Enhancement

Original Image



Enhanced Image



Automatic Moving Object Detection & Tracking Improvement

▼ Existing drone detection & tracking system



▼ With HVH-200 enhancement applied



- ▶ Drone footage in heavy fog
- ▶ The HVH-200 significantly boosts the performance of automatic moving-object detection and tracking software.
- ▶ In foggy footage, vehicle detection is difficult, but once enhanced, moving vehicles become clearly detectable.

Delivery Record

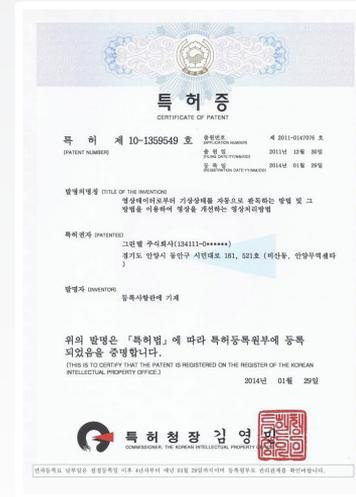
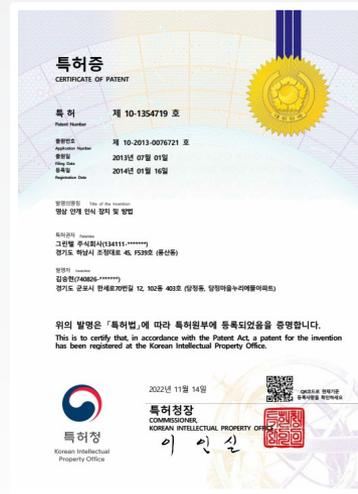
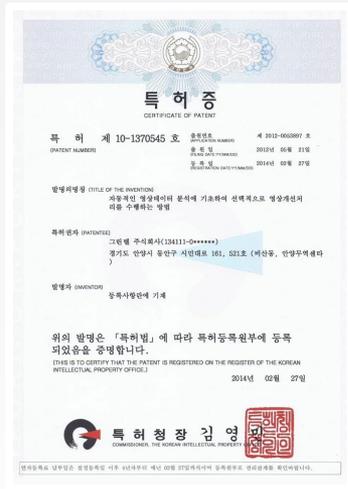
	Product Model	Delivery Period	End User	Remarks
1	HVH-200	2020~2021	Republic of Korea Air Force	Base Perimeter Security
2	HVH-200	2022~2023	Republic of Korea Army	Frontline Division
3	HVH-200	2023	Korea Hydro & Nuclear Power	Hydroelectric Power Plant
4	HVH-200	2023	Korea Hydro & Nuclear Power	Nuclear Power Plant
5	HVH-200	2024	Vietnam Maritime Administration	Vessel Traffic System
6	HVH-200	2024	Regional Facilities Management Corporation	Gyeongsang Province
7	HVH-200	2024	Regional Urban Management Corporation	Gyeonggi Province
8	HVH-200	2024	Republic of Korea Army	Frontline Division
9	HVH-200	2024	Waterworks Authority	Seoul
10	HVH-200	2025	Regional Office of Education	Chungcheong Province
11	HVH-200	2025	Waterworks Authority	Seoul
12	HVH-200	2021~2025	Korea Coast Guard	Coast Guard Patrol Vessels
13	HVH-200	2025	Regional Port Authorities	Pyeongtaek Port & Gwangyang Port

Registered Patents

1. A method for selectively performing video enhancement based on automatic analysis of video data.
2. A method for automatically identifying weather conditions from video data and enhancing images using the identified conditions.
3. A device and method for fog recognition in video images.

Patent Applications

1. A video enhancement device and an image processing system equipped with the device.
2. A video-based moving object detection system and method



▶ Performance Certification

- ▶ The video system passed performance testing conducted by the Republic of Korea Navy and was selected as an outstanding case in the Naval Operations Command's base perimeter surveillance category.
- ▶ Certified with KC, CE, and FCC approvals.
- ▶ An official MRTD test report has been issued.
- ▶ Successfully completed an innovative product pilot project with a Republic of Korea Army frontline division. As a result of the pilot project, the HVH-200 Video Enhancer was evaluated as "Excellent in Video and Image Enhancement Performance."
- ▶ – **Received final approval** as a successful product under **the Public Procurement Service's Innovative Product Pilot Program**.

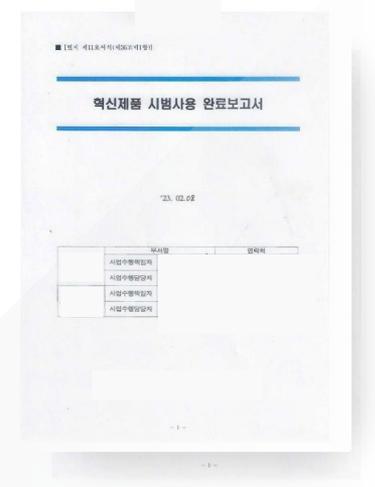
▼ KC & CE Certifications



▼ MRTD test report – NATO STANAG



▼ Final Completion Report – Republic of Korea Army



Q1 What types of cameras are compatible?

- › Compatible with all types of cameras.
-

Q2 Is video enhancement unnecessary for expensive, high-end cameras?

- › The video enhancer is applicable not only to legacy cameras but also to the latest camera systems.
 - › Even high-performance cameras produce blurred images under poor weather and low-visibility conditions.
-

Q3 How much improvement can be achieved?

- › Image quality can be enhanced from approximately 0.92 megapixels up to 2.07 megapixels.
-

Q4 What is the warranty period?

- › The product warranty period is one year. After the warranty period, repairs are provided free of charge or at cost depending on the cause of failure.
(Failures caused by user negligence are excluded from free repair)

Q5

Can recorded videos also be enhanced?

- › The video enhancer can improve not only live camera feeds but also recorded footage and even YouTube videos.
-

Q6

What differentiates this video Enhancer from other products?

- › Through its intelligent Auto Mode, the device automatically analyzes video and weather conditions and optimizes image quality without operator intervention.
 - › It enhances video across multiple conditions, including fog, snow, fine dust, and low light.
 - › 3–7x more cost-effective than comparable or lower-performance solutions.
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Q7

How does the Video Enhancer operate?

- › Video quality is optimized using more than ten proprietary algorithms.
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Q8

Does it support real-time enhancement?

- › Yes, it supports real-time enhancement, although a slight delay of approximately 1–2 frames may occur depending on the operating mode.



감사합니다

THANK YOU

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