

## i-PRO 4K & 5MP Fixed Network Camera with AI Engine

**WV-X2571LN / X2551LN** (Outdoor Vandal Resistant Dome model)

**WV-X2271L / X2251L** (Indoor Vandal Resistant Dome model)

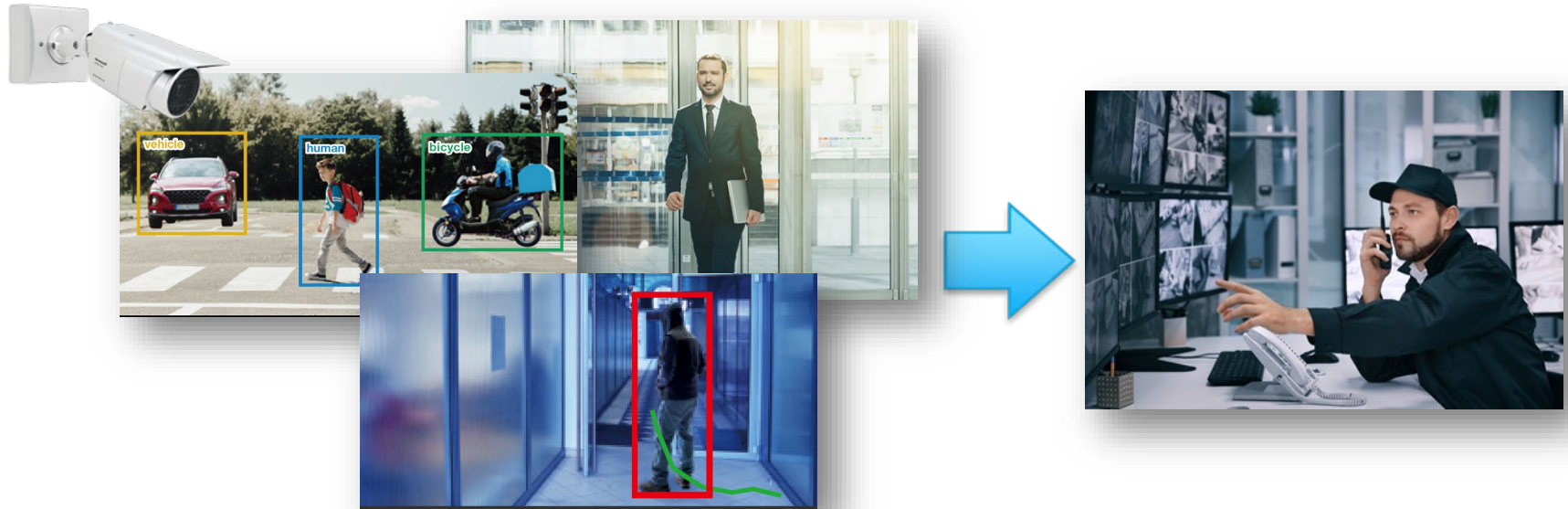
**WV-X1571LN / X1551LN** (Outdoor Bullet Vandal Resistant model)

**Ver. 1.00**

Panasonic i-PRO Sensing Solutions Co., Ltd.



AI-based high precision analysis helps surveillance operations and crime prevention operations more efficiently, that operations previously required manpower.



New X-Series i-PRO camera has built-in AI engine  
to enable analytical applications on network edge.

## Three AI functions

- High precision detection & identification
- Optimizing image quality setting – intelligent Auto utilized AI engine
- Optimizing video compression – Smart coding utilized AI engine

## AI analytics applications

- AI-VMD (Video Motion Detection)
- AI Privacy Guard
- Be used up to three video analytics applications

## Usability

- Provided i-PRO camera application platform for developers and customers
- AI-VMD 2-steps installation procedure



## ■ High precision detection & identification

Built-in AI engine in a camera to detect and identify face, human, vehicles and two-wheel motorcycles / bicycles in high precision to upgrade to advanced video surveillance solutions.



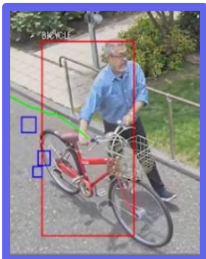
Detect & identify objects in scene

## ■ High precision detection & identification

Enables to detect and identify important objects under various environments



Under the daytime environment



Under 0.3 lux Lighting environment



Under 0 lux Lighting environment

New i-PRO 5MP WV-X2551L

## ■ High precision detection & identification

Enables to detect and identify important objects under various environments

### At raindrops



Other leading brand camera  
without any special coating dome cover.

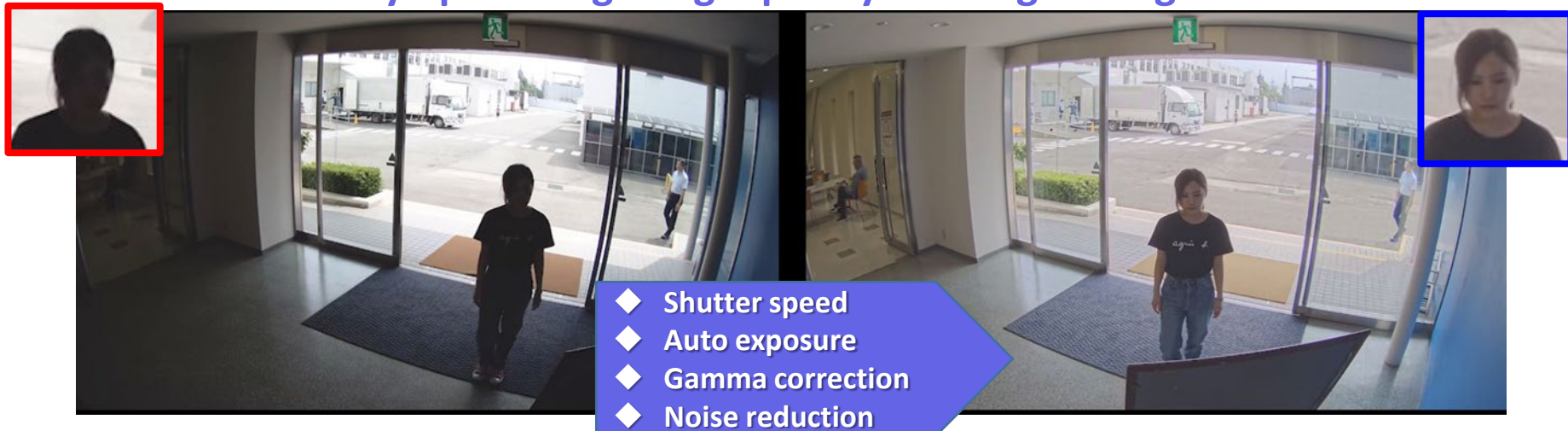
New i-PRO 5MP WV-X2551L  
With ClearSight coating dome cover.

Under 0 lux Lighting environment with IR LED light

## ■ intelligent Auto utilized AI engine (5MP model)

Improving visibility of monitoring objects

by optimizing image quality utilizing intelligent Auto feature.



**Conventional i-PRO camera**

Super Dynamic : OFF

intelligent Auto : OFF

**New i-PRO 5MP WV-X2551L**

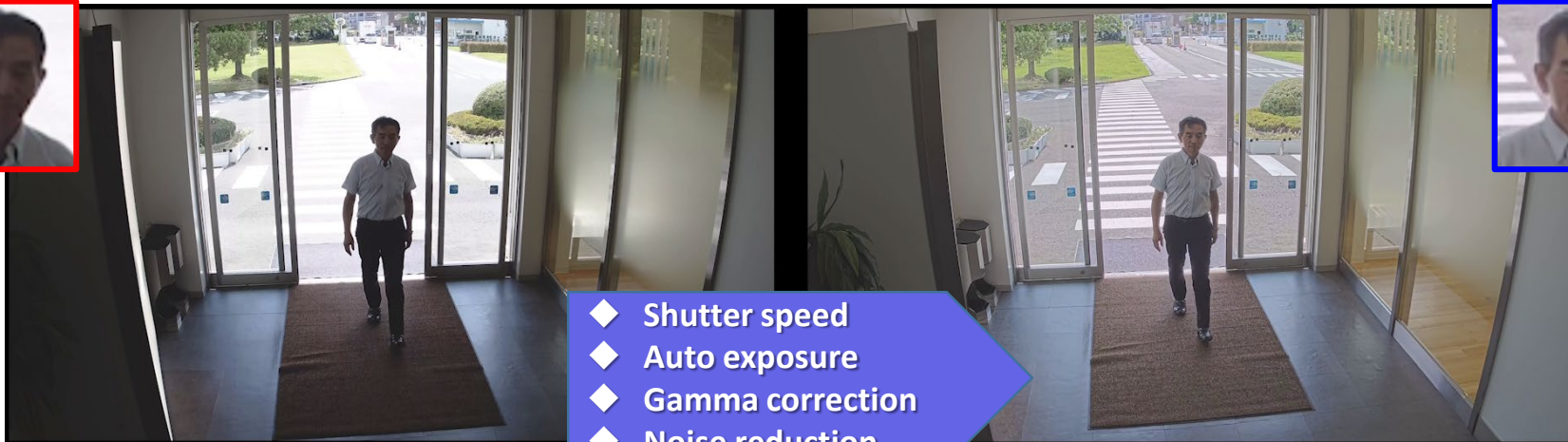
Super Dynamic : ON

intelligent Auto : ON

## ■ intelligent Auto utilized AI engine (4K model)

Improving visibility of monitoring objects

by optimizing image quality utilizing intelligent Auto feature.



- ◆ Shutter speed
- ◆ Auto exposure
- ◆ Gamma correction
- ◆ Noise reduction

**Conventional i-PRO camera**

Super Dynamic : OFF

intelligent Auto : OFF

**New i-PRO 4K WV-X2571L**

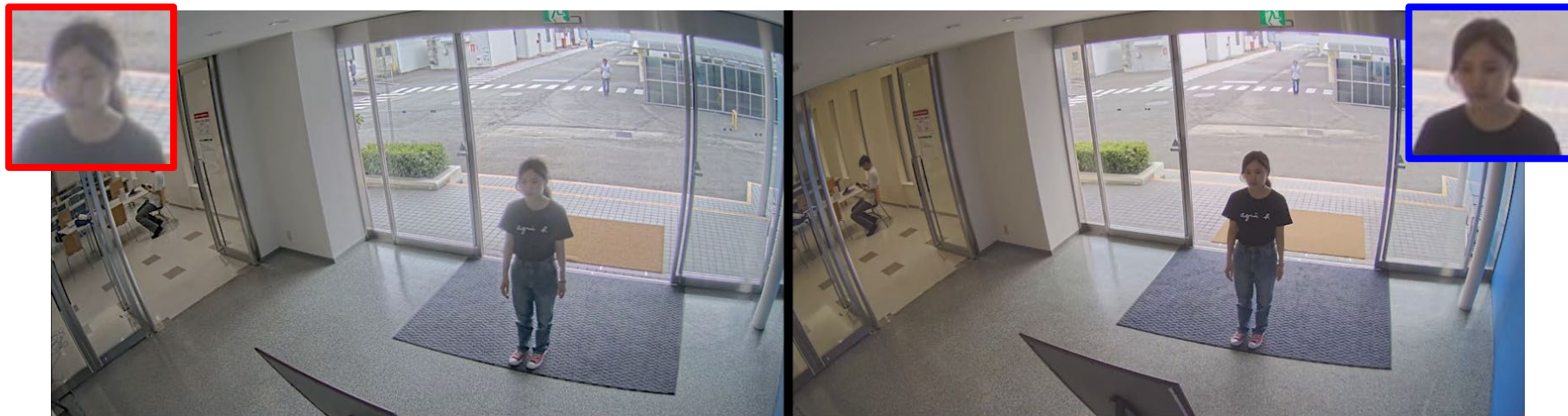
Super Dynamic : ON

intelligent Auto : ON



## ■ intelligent Auto utilized AI engine (5MP model)

Comparison image quality with other leading brand camera.

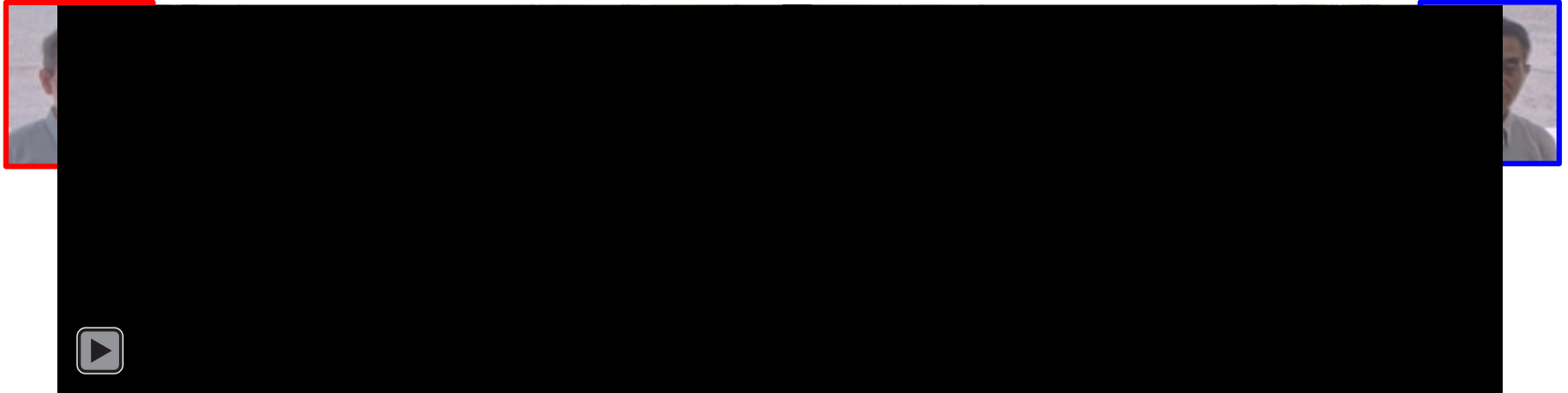


Other leading brand camera  
Wide Dynamic Range : ON

New i-PRO 5MP WV-X251L  
Super Dynamic : ON  
intelligent Auto : ON

## ■ intelligent Auto utilized AI engine (4K model)

Comparison image quality with other leading brand camera.

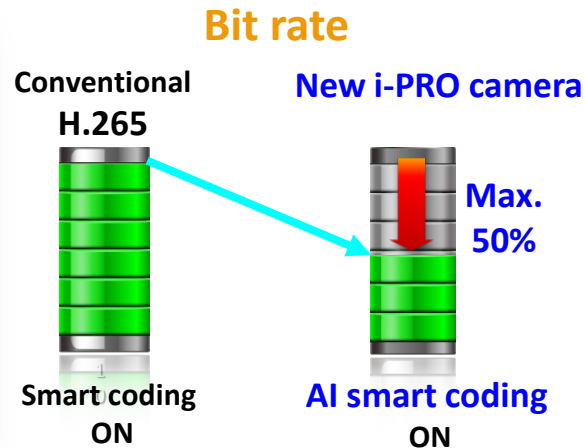
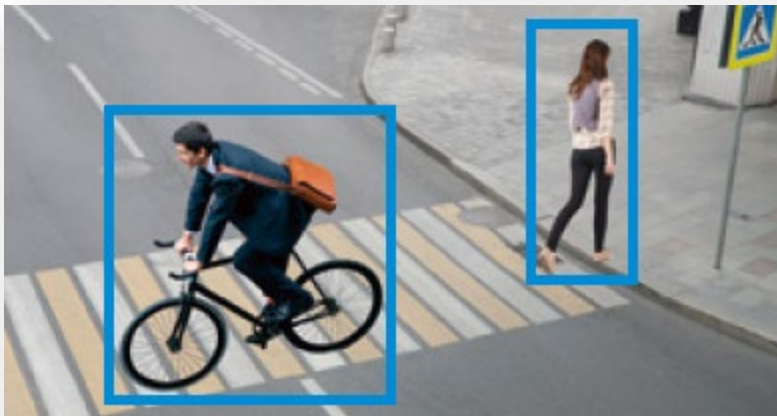


**Other leading brand camera**  
Wide Dynamic Range : ON

**New i-PRO 4K WV-X2571L**  
Super Dynamic : ON  
**intelligent Auto : ON**

## ■ Optimizing video compression – Smart coding

Utilizing smart coding to optimize video compression to conserve network bandwidth and server storage capacities.



It reduces bit rate by controlling the image quality of still areas, moving areas, and faces with AI engine.

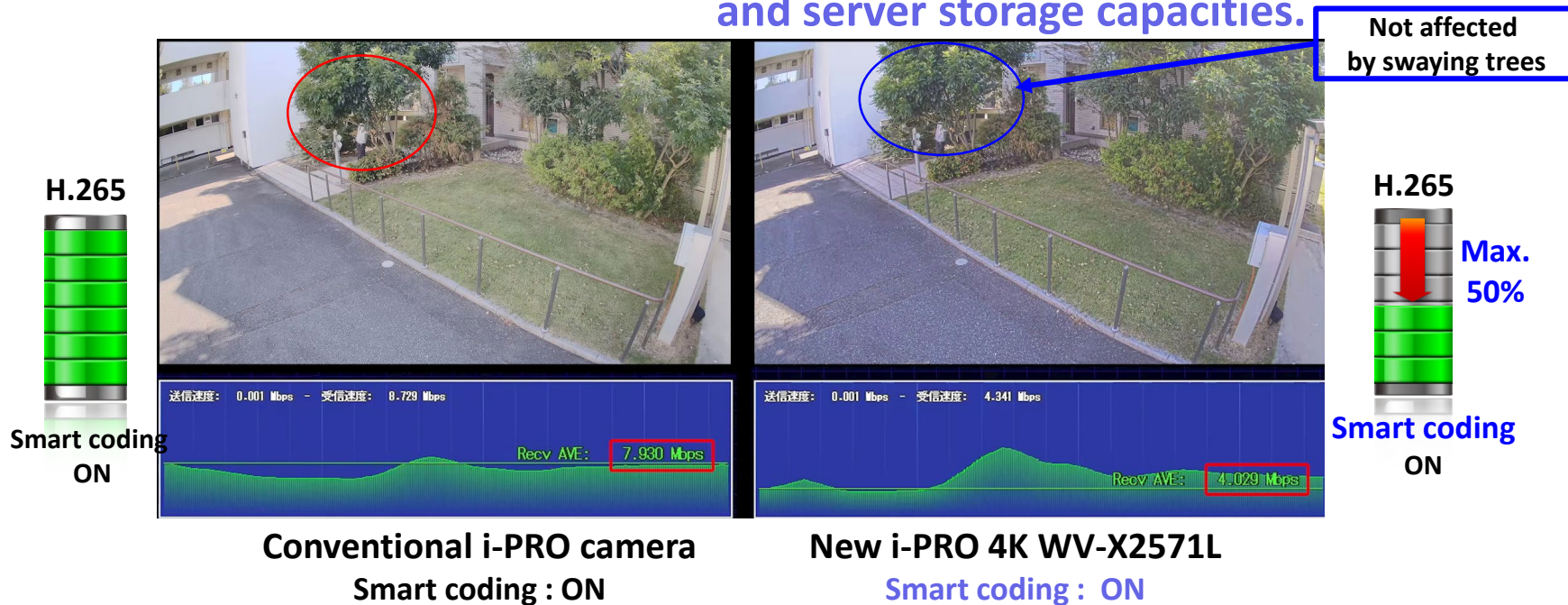
## ■ Smart coding utilized AI engine (5MP model)

To optimize video compression to conserve network bandwidth and server storage capacities.



## ■ Smart coding utilized AI engine (4K model)

To optimize video compression to conserve network bandwidth and server storage capacities.



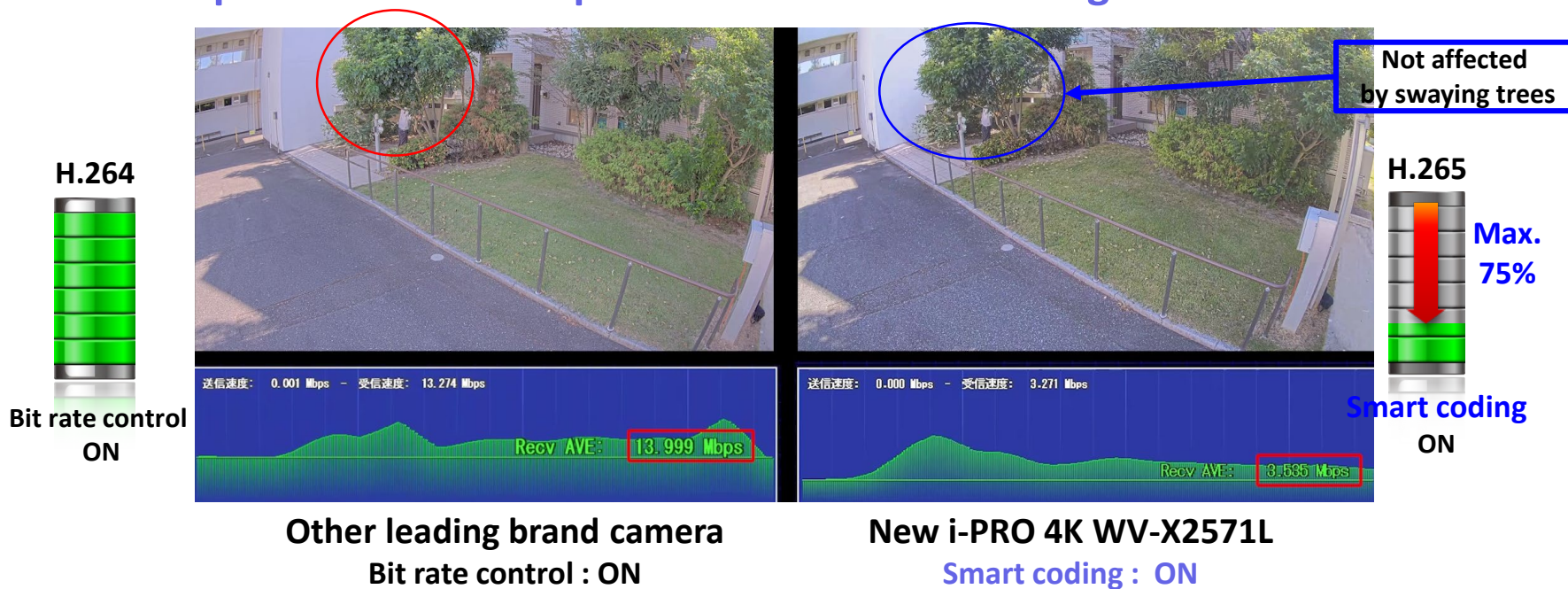
## ■ Smart coding utilized AI engine (5MP model)

Comparison video compression with other leading brand camera.



## Smart coding utilized AI engine (4K model)

Comparison video compression with other leading brand camera.



## ■ AI-VMD (Video Motion Detection)

Improving video analysis accuracy by AI engine.

Reduce the occurrence rate of false detection in these scene cases.

Swaying trees and plants



Shadow and reflection



Light



15

Raindrops



**i-PRO Camera**  
**With**  
**ClearSight coating**

**Conventional camera**  
**Without**  
**any special coating**



## ■ AI-VMD (Video Motion Detection)

Improving video analysis accuracy by AI engine.

Reduce the occurrence rate of false detection in these scene cases.



**Bird**



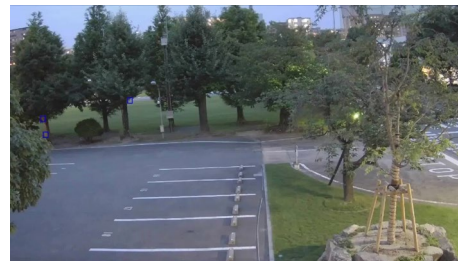
**Rubbish**



**Swaying plants**



**Ball**



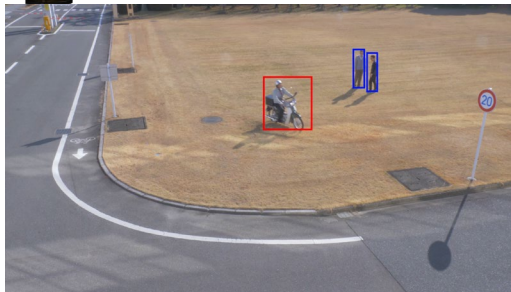
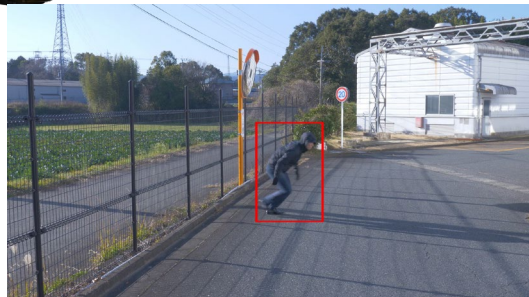
**Light**

## ■ AI-VMD (Video Motion Detection)

Optional extension software **WV-XAE200W**

### Intruder Detection

Detect and issue an alarm when a moving object intrudes the specified area.



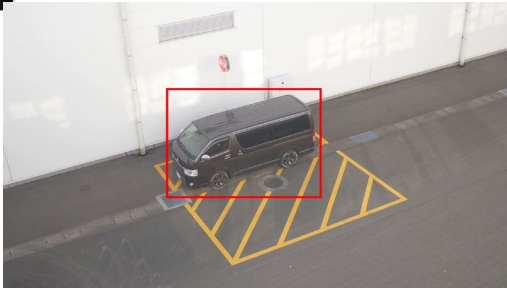
\*This video clips just shows to imagine how the detection functions activate are.

## ■ AI-VMD (Video Motion Detection)

Optional extension software WV-XAE200W

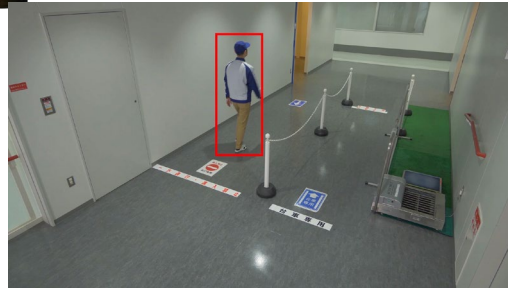
### Loitering Detection

Detect and issue an alarm when a moving object loiters or stays in specified period at specified area.



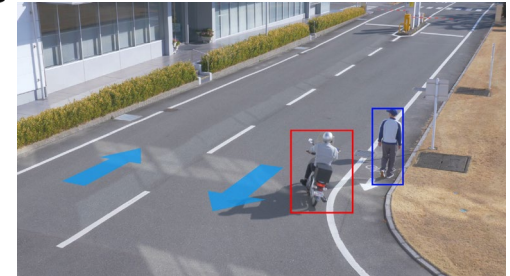
### Cross Line Detection

Detect and issue an alarm when an object move to across a line in a specified direction.



### Direction Detection

Detect and issue an alarm when an object move to specified direction at specified area.



\*This video clips just shows to imagine how the detection functions activate are.

## ■ AI Privacy Guard

Optional extension software WV-XAE201W

To detect and recognize human figures in a scene and pixelate their figures or faces for protect privacy and portrait rights.

Utilizing AI engine enables....



To use with lighting fluctuations and outdoors in environments.



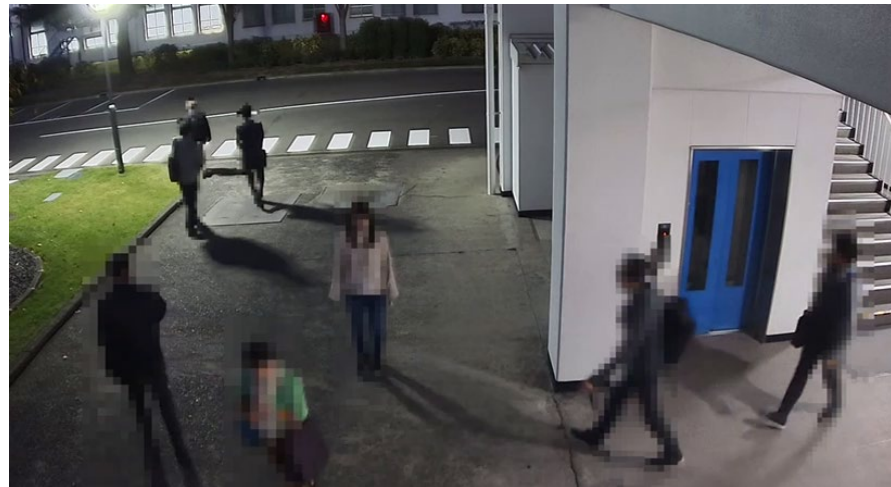
To activate privacy guard continuously even if human is moving or not.

## ■ AI Privacy Guard

Optional extension software WV-XAE201W



Factory



Outdoor in the office building

## ■ Be used up to three video analytics applications

With AI engine to enable to install and activate  
up to three video analytical applications.

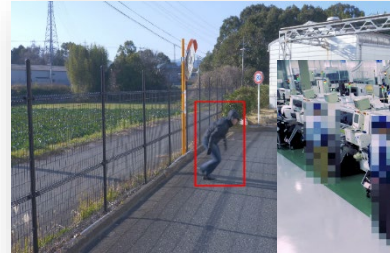


**New X series i-PRO cameras  
with AI engine**



(Example)

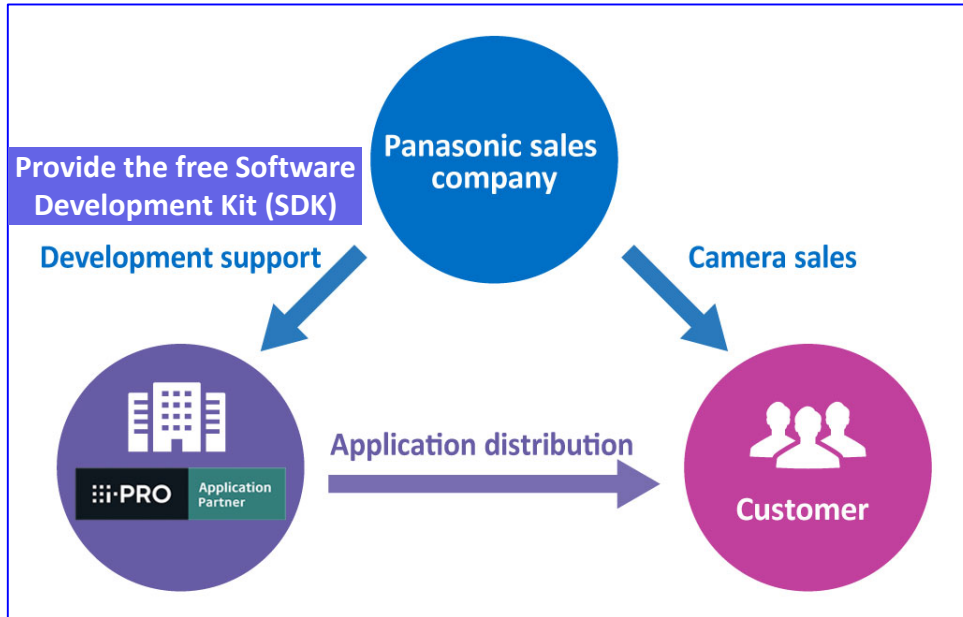
AI-VMD



Privacy Guard

And enables to add  
one video analytics application.

## ■ Provided i-PRO camera application platform for developers and customers

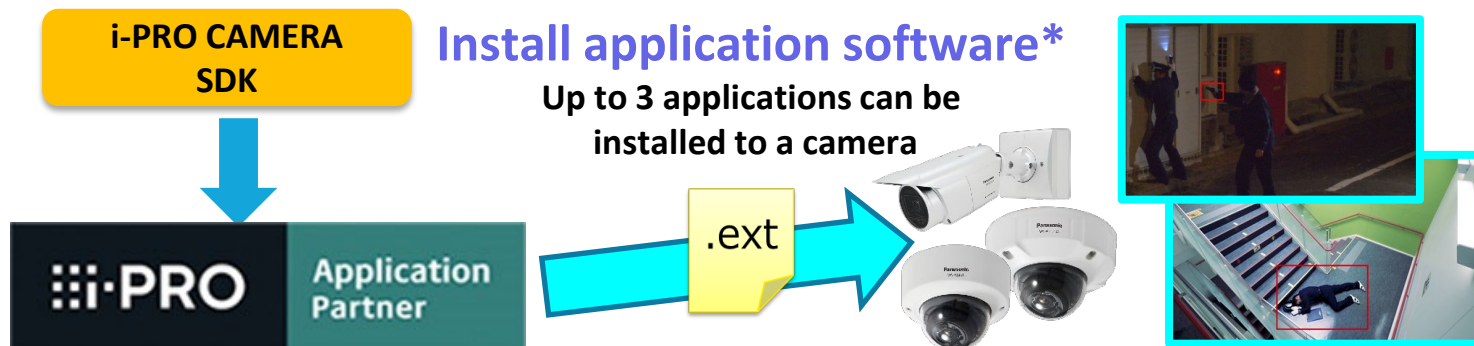


Partner companies that provide unique applications through the i-PRO Camera Application Platform.

## ■ Provided i-PRO camera application platform for developers and customers

### Provide the free Software Development Kit (SDK)

Enables to supply SDK to application partners to develop compatible their video analysis app. for meet customer requirement applications.



\*Depending on the app.WV-XLE001W which is the license for cancelling external application may be required.



## ■ AI-VMD 2-steps installation procedure

Enables high-accuracy video analysis with easy setting with AI engine.

### Installation procedure

Step-1

License installation

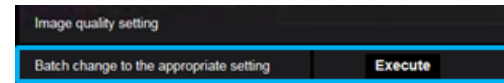
Intruder detection will be activated automatically when the license installation will be finished.



Step-2

Output setting

(Note) If the detection accuracy of AI-VMD is lower than expected in some environments, enable to simply click "Batch change to appropriate settings" to optimize image quality and improve accuracy.



## Achieve high endurance and long life usage under extreme conditions

■ Dustproof Test



■ High-Temperature Test



■ Pressure Test



■ Earthquake Test



■ Waterproof Test



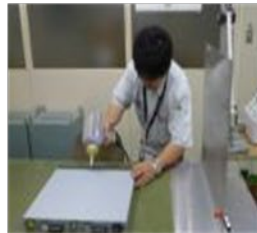
■ Lifetime Test



■ Thunder Test



■ Static Electricity Test



■ Drop Test



■ Box Shaking Test



Achieve high endurance and long life usage under extreme conditions

## ■ Vandal Resistant

- ✓ Highly impact resistant
- ✓ IEC 62262 IK10



## ■ Water & Dust Resistant

- ✓ IP66 (IEC60529)
- ✓ Type 4X(UL50E)
- ✓ NEMA 4X compliant

\*Except WV-X2251L/X2271L

## ■ Anti-corrosion screw

\*Except WV-X2251L/X2271L

Adoption of Anti-corrosion screws prevents to corrosion and improves maintainability.

## ■ Wind Resistance

\*Except WV-X2251L/X2271L

Operates under up to 40 m/s  
(approx. 89 mph) environment

## Secure communication with DigiCert certification



### Vulnerability Assessment

- 3<sup>rd</sup> party assessment and penetration tests made to achieve higher security standards



### DigiCert Device Certification

- Pre-installed DigiCert Certification
- Video tampering detection

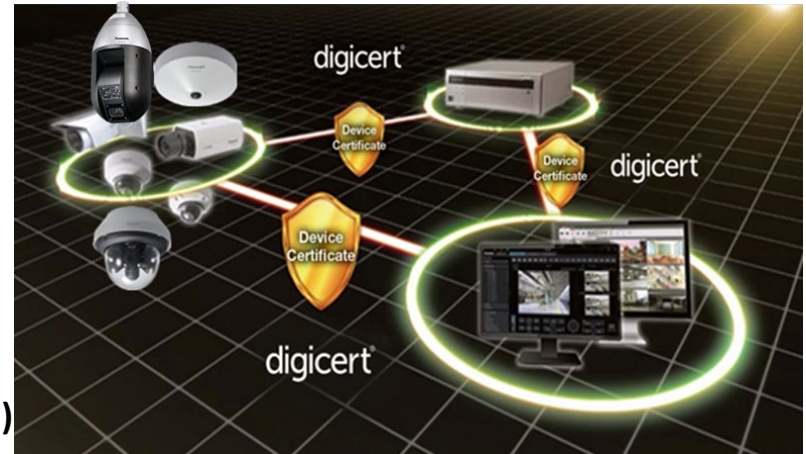


### End-to-End Data Encryption

- Support full encryption communication
- Camera encryption recording on-the-edge






- ### FIPS140-2 Level 1 CAVC compliant
- (Federal Information Processing Standardization)
- For federal/public safety usage






# Specifications (5MP models)



		WV-X2251L 	WV-X2551LN 	WV-X1551LN 
Image sensor		1 / 2.8 type CMOS		
Max. video resolution (pixel)		3072 x 1728		
Max. frame rate		30 fps * 15fps (Super Dynamic: On, Level: 30 or more)		
Minimum Illumination *Shutter speed 1/30s	Color	0.07lx @F1.3, 0.0044 lx @ shutter speed 16/30		
	B/W	0.04lx @F1.3, 0.003 lx @ shutter speed 16/30, 0 lx @ IR		
Angular Field of View *16:9 mode	Horizontal	33° (Tele) - 105° (Wide)	33° (Tele) - 103° (Wide)	34° (Tele) - 106° (Wide)
	Vertical	19° (Tele) - 56° (Wide)	19° (Tele) - 55° (Wide)	19° (Tele) - 57° (Wide)
Intelligent Auto / WDR / Smart coding		<b>intelligent Auto / Super Dynamic (132dB) / Smart Coding</b>		
IR LED /Max.irradiation distance		Yes, / 30 m {Approx 98 ft}	Yes / 40 m {Approx. 131 ft}	
Audio Interface / Compression		input (ø3.5 mm stereo mini jack x 1, Line x1), Output(ø3.5 mm stereo mini jack x 1) / G.726, G.711, AAC-LC		
SD memory card slot		1slot (SDXC/SDHC/SD)		
Secure communication		FIPS 140-2 Level 1 compliant		
External I/O Terminals		ALARM IN 1(Alarm input 1/ Black & white input/ Auto time adjustment input) (x1) ALARM IN 2 (Alarm input 2/ ALARM OUT) (x1) , ALARM IN 3 (Alarm input 3/ AUX OUT) (x1)		
Environmental		IK10	IP66, Type 4X(UL50), NEMA 4X compliant Compliant with 50J IEC60068-2-75, IK10	IP66, Type 4X(UL50), NEMA 4X compliant IK10
Power Source / Ambient Operating Temperature		DC12V,PoE -10° C ~ +50° C (14° F ~ +122° F)	DC12V, PoE, -40° C to +60° C (-40° F to 140° F) / IR LED is off (Power On range : -30° C to +60° C {-22° F to +140° F})	
Dimension (mm)		ø129.5 mm x 103.5 mm (H)	ø164 mm x 139 mm (H) *When using base bracket	133 mm (W) x 133 mm (H) x 377 mm (L) *With adaptor box




# Specifications (4K models)



		WV-X2271L 	WV-X2571LN 	WV-X1571LN 
Image sensor		1 / 1.8 type CMOS		
Max. video resolution (pixel)		3840 x 2160		
Max. frame rate		30 fps * 15fps (Super Dynamic: On, Level: 30 or more)		
Minimum Illumination *Shutter speed 1/30s	Color	0.09lx @F1.5, 0.006 lx @ shutter speed 16/30		
	B/W	0.05lx @F1.5, 0.003 lx @ shutter speed 16/30, 0 lx @ IR		
Angular Field of View *16:9 mode	Horizontal	52° (Tele) - 101° (Wide)	52° (Tele) - 101° (Wide)	53° (Tele) - 104° (Wide)
	Vertical	29° (Tele) - 55° (Wide)	29° (Tele) - 55° (Wide)	30° (Tele) - 56° (Wide)
Intelligent Auto / WDR / Smart coding		<b>intelligent Auto / Super Dynamic (132dB) / Smart Coding</b>		
IR LED /Max.irradiation distance		Yes, / 30 m {Approx 98 ft}	Yes / 40 m {Approx. 131 ft}	
Audio Interface / Compression		input (ø3.5 mm stereo mini jack x 1, Line x1), Output(ø3.5 mm stereo mini jack x 1) / G.726, G.711, AAC-LC		
SD memory card slot		1slot (SDXC/SDHC/SD)		
Secure communication		FIPS 140-2 Level 1 compliant		
External I/O Terminals		ALARM IN 1(Alarm input 1/ Black & white input/ Auto time adjustment input) (x1) ALARM IN 2 (Alarm input 2/ ALARM OUT) (x1) , ALARM IN 3 (Alarm input 3/ AUX OUT) (x1)		
Environmental		IK10	IP66, Type 4X(UL50), NEMA 4X compliant Compliant with 50J IEC60068-2-75, IK10	IP66, Type 4X(UL50), NEMA 4X compliant IK10
Power Source / Ambient Operating Temperature		DC12V,PoE -10° C ~ +50° C (14° F ~ +122° F)	DC12V, PoE, -40° C to +60° C (-40° F to 140° F) / IR LED is off (Power On range : -30° C to +60° C {-22° F to +140° F})	
Dimension (mm)		ø129.5 mm x 103.5 mm (H)	ø164 mm x 139 mm (H) *When using base bracket	133 mm (W) x 133 mm (H) x 377 mm (L) *With adaptor box

It shows the maximum distance at which a camera's tele and wide can meet DORI. \*1

\*This value does not indicate the performance of the camera




 <p><b>WV-X1551LN</b></p>	<b>Resolution</b>		<b>Tele 34°</b>		<b>Wide 106°</b>	
	<b>3072 × 1728 *2</b>		<b>Distance (m)</b>	<b>Distance (ft)</b>	<b>Distance (m)</b>	<b>Distance (ft)</b>
	Detect	25ppm / 8ft	200.96	659.32	46.3	151.90
	Observe	62.5ppm / 19ft	80.38	263.73	18.52	60.76
	Recognize	125ppm / 38ft	40.19	131.86	9.26	30.38
Identify	250ppm / 76ft	20.1	65.93	4.63	15.19	
 <p><b>WV-X2551LN</b></p>	<b>Resolution</b>		<b>Tele 33°</b>		<b>Wide 103°</b>	
	<b>3072 × 1728 *2</b>		<b>Distance (m)</b>	<b>Distance (ft)</b>	<b>Distance (m)</b>	<b>Distance (ft)</b>
	Detect	25ppm / 8ft	207.42	680.51	48.87	160.34
	Observe	62.5ppm / 19ft	82.97	272.20	19.55	64.14
	Recognize	125ppm / 38ft	41.48	136.10	9.77	32.07
Identify	250ppm / 76ft	20.74	68.05	4.89	16.03	
 <p><b>WV-X2251L</b></p>	<b>Resolution</b>		<b>Tele 33°</b>		<b>Wide 105°</b>	
	<b>3072 × 1728 *2</b>		<b>Distance (m)</b>	<b>Distance (ft)</b>	<b>Distance (m)</b>	<b>Distance (ft)</b>
	Detect	25ppm / 8ft	207.42	680.51	47.14	154.67
	Observe	62.5ppm / 19ft	82.97	272.20	18.86	61.87
	Recognize	125ppm / 38ft	41.48	136.10	9.43	30.93
Identify	250ppm / 76ft	20.74	68.05	4.71	15.47	

\*1 It is calculated with the camera installed horizontally.

\*2 Super resolution mode

It shows the maximum distance at which a camera's tele and wide can meet DORI. \*1

\*This value does not indicate the performance of the camera

 <b>WV-X1571LN</b>	Resolution 3840 × 2160 *2		Tele 53°		Wide 104°	
			Distance (m)	Distance (ft)	Distance (m)	Distance (ft)
Detect	25ppm / 8ft	60.00	196.86	154.04	505.37	
Observe	62.5ppm / 19ft	24.00	78.74	61.61	202.15	
Recognize	125ppm / 38ft	12.00	39.37	30.81	101.07	
Identify	250ppm / 76ft	6.00	19.69	15.40	50.54	
 <b>WV-X2571LN</b>	Resolution 3840 × 2160 *2		Tele 52°		Wide 101°	
			Distance (m)	Distance (ft)	Distance (m)	Distance (ft)
Detect	25ppm / 8ft	63.31	207.71	157.46	516.61	
Observe	62.5ppm / 19ft	25.32	83.08	19.55	64.14	
Recognize	125ppm / 38ft	12.66	41.54	31.49	103.32	
Identify	250ppm / 76ft	6.33	20.77	15.75	51.66	
 <b>WV-X2271L</b>	Resolution 3840 × 2160 *2		Tele 52°		Wide 101°	
			Distance (m)	Distance (ft)	Distance (m)	Distance (ft)
Detect	25ppm / 8ft	63.31	207.71	157.46	516.61	
Observe	62.5ppm / 19ft	25.32	83.08	19.55	64.14	
Recognize	125ppm / 38ft	12.66	41.54	31.49	103.32	
Identify	250ppm / 76ft	6.33	20.77	15.75	51.66	

\*1 It is calculated with the camera installed horizontally.

\*2 Super resolution mode



**Indoor  
Vandal Resistant Dome  
WV-X2251L / X2271L**






















**Dome Cover(Smoke type)  
WV-CR1S**

		Ceiling				
		1	2	3	4	5
Combination		WV-Q105A 	WV-QEM100-W 	WV-QCL501-W 	WV-QCL100-W WV-QCL101-W (US only) 	WV-QAT500-W 
				WV-QSR501-W 	3rd.parties pipe 	WV-QSR501-W 
						3rd.parties pipe 
		Wall		Pole	Corner	
		1	2	1	1	
Combination		WV-QWL501-W 	WV-QJB500-W 	WV-QPL500-W 	WV-QCN500-W 	
		WV-QSR501-W 	WV-QWL500-W 	WV-QJB500-W WV-QWL500-W 	WV-QJB500-W WV-QWL500-W 	

**Outdoor  
Vandal Resistant Dome  
WV-X2551LN / X2571LN**









**Dome Cover(Smoke type)  
WV-CW7S  
WV-CW7SN(ClearSight coating)**

		Ceiling				
		1	2	3	4	
<b>Combination</b>		Supplied 	WV-QEM500-W 	WV-QCL501-W 	3rd. parties pipe 	
				WV-QSR501-W 	WV-QSR501-W 	
					WV-QAT500-W 	
		Wall			Pole	Corner
		1	2	3	1	1
<b>Combination</b>		WV-QWL501-W 	WV-QJB500-W 	WV-QSR500-W 	WV-QPL500-W 	WV-QCN500-W 
		WV-QSR501-W 	WV-QWL500-W 	Supplied 	WV-QJB500-W WV-OWL500-W  	WV-QJB500-W WV-OWL500-W  

**Outdoor Bullet  
WV-X1551LN / X1571LN**



	Ceiling	Wall	Pole	Corner
	1	1	1	1
<b>Combination</b>	Supplied 	Supplied 	WV-QPL500-W 	WV-QCN500-W 
			Supplied 	Supplied 

Those cameras are suitable under the extreme conditions

- ✓ Retails
  - ✓ Education
  - ✓ Retail
  - ✓ Bank / Logistics / Hospital / Building
  - ✓ Public safety
- and more.



-PRO