



Install Various types of applications to keep your i-PRO network camera on the cutting edge.

There are many types of AI applications that can be installed on network cameras at no additional cost. Although i-PRO network cameras are edge devices, they are in charge of various detection processes. As a result, the camera is responsible for the advanced processing and the server does not require expensive hardware.

i-PRO AI applications

AI Video Motion Detection (AI-VMD)

- AI differentiates between vehicles, motorcycles, bicycles, and people. It further detects and sends warning notifications when they enter a specified area. It can also count the number of times the target object crosses line.



Intruders

- It is possible to issue an alarm when a moving object enters a specified area.



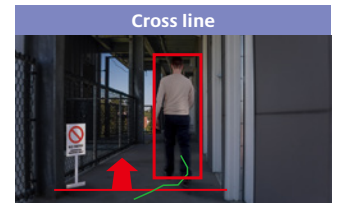
Loitering

- It is possible to issue an alarm when a moving object enters a specified area and stays there for a specified amount of time.



Direction

- It is possible to issue an alarm when a moving object enters a specified area and moves in the specified direction.



Cross line

- It is possible to issue an alarm when an object moving in the specified direction crosses a specified threshold.

AI On-site Learning

- AI On-site Learning allows to enhance AI analysis by adding target object and improving accuracy. You can add customized objects to detect using on-site camera footage through simple learning process. In addition, it contributes to reduce missed/false alarms by training based on the past footage.



| | |
|--|---|
| Supported camera | WV-X15xxx, WV-X22xxx, WV-X25xxx (New X series Camera) Note: To be used with AI-VMD |
| SD card | Not required |
| No. of learning images required | 10 - 200 images |
| No. of target to be added | Up to 5 targets Note: Additional targets can be detected simultaneously |

*For learning process, collecting images and manual operations to teach the correct target are required. Also, detection performance depends on the learning results and the environments you use. Be sure to check the operation at the installation site.

*For configuration (detection area etc.), please use the latest version of i-PRO configuration tool (iCT).

AI Privacy Guard

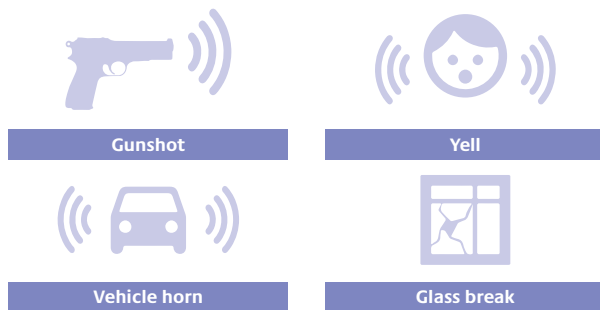
- To protect privacy and portrait rights, it is possible to automatically apply a mosaic the entire face and figure of a person captured by the camera.



| | |
|-----------------------------|--|
| Privacy Guard target | Face, Human, Except face, Except human, All * "Except face, Except human, All" are available with the firmware released in February 2024 or later |
| Stream | Stream(1), Stream(2), Stream(3), Stream(4), Stream(2)&(4) |
| Masking method | Blurring, Filling |

AI Sound Classification

- AI detects and identifies (gunshot / yell / vehicle horn / glass break) sound. It then sends a warning notification according to the sound identified.



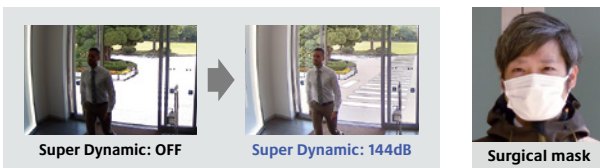
| | |
|---------------------------------|---|
| Classification target | 1.Gunshot 2.Yell 3.Vehicle horn 4.Glass break |
| Classification condition | Target sound is 6 dB louder than crowd. Target sound continues more than a second. (except for gunshot) |

External microphone is required.*

*Frequency characteristics: support 200 Hz to 8 kHz, Omnidirectional microphone.

AI Face Detection

- The i-PRO network camera utilizing an AI engine and i-PRO Active Guard realize real-time face recognition without an expensive face recognition server. AI detection enables highly accurate face detection, and is also effective for detection in low lighting, backlit environments, or for detecting faces obscured by masks.

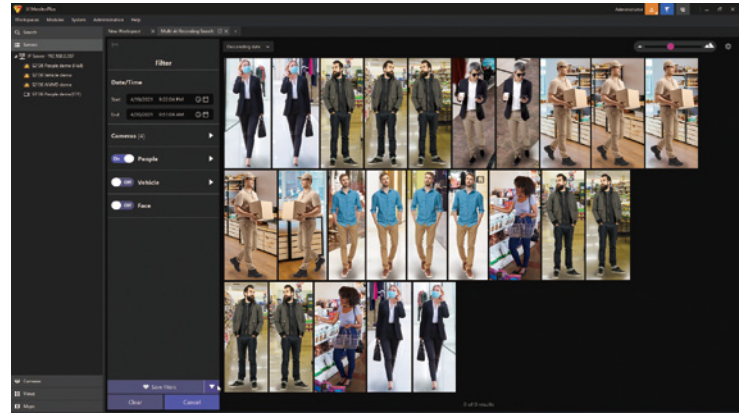


| | |
|--|--|
| Range of angle | Horizontal: 0° - 45°, Vertical: 0° - 30° |
| Detection number at the same time | Max. 8 faces |
| Size of face image | Min. size: width 30 pix Recommend: 60 pix |
| Min. illumination level | 100 lux |
| Max. number of cameras | 20 when installed with VMS server PC 60 when installed in dedicated server PC |
| Max. number of watchlist | 1,000 faces |
| Recommended model | WV-S1136, WV-S1536LTN, WV-S2536LTN |

AI People Detection

- Characteristics of the human face and clothing are extracted and classified into useful categories such as gender, age, and clothing color. This abundant attribute information can then be searched to easily find the target person.

| Attributes | Values |
|---------------------|---|
| Gender | Male / Female |
| Age | Child (0-10) / Young Adult (11-20) / Adult (21-60) / Senior (61+) |
| Mask | Mask / No Mask |
| Hair type | Long hair / Short hair / Hat |
| Hair color | Black / Brown / White / Gray / Gold |
| Sunglasses | Sunglass / No Sunglasses |
| Beard | Beard / No Beard |
| Top type | Long sleeves / Short sleeves |
| Top color | Black / Brown / White / Gray / Green / Red / Blue / Yellow / Orange / Purple / Pink |
| Bottom type | Long / Short |
| Bottom color | Black / Brown / White / Gray / Green / Red / Blue / Yellow / Orange / Purple / Pink |
| Bag | Bag / No Bag |
| Bag color | Black / Brown / White / Green / Red / Blue / Yellow / Orange / Purple / Pink |
| Shoes color | Black / Brown / White / Green / Red / Blue / Yellow |



| | | |
|---------------------------------------|--|---|
| Conditions | Range of angle | Vertical: 0° to 45° |
| | Detection number at the same time | Max. 20 people |
| | Size of people image | Min. size: width 60 pix Recommended size : width 100 pix |
| | Min. illumination level | Min. illumination level : 10 lux Recommended illumination level : 50 lux |
| Mask Area (non-detection area) | | Max. 8 areas (polygonal) can be set |



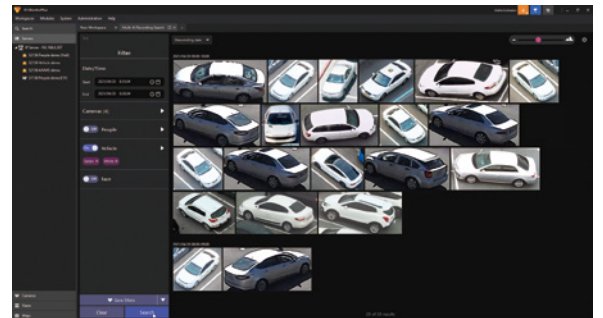
AI Vehicle Detection

- Vehicle characteristics are extracted and classified into useful categories such as type and color. This abundant attribute information can then be searched to easily find the target vehicle.

Vehicle Type



Vehicle Color

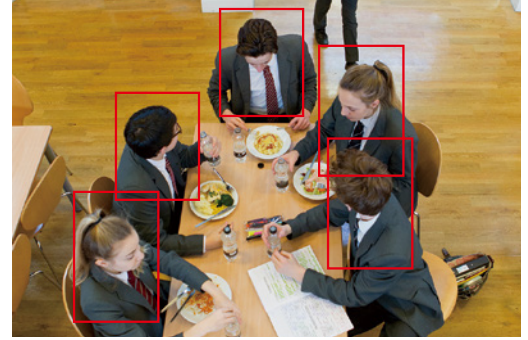


| | | |
|---------------------------------------|--|--|
| Conditions | Range of angle | Vertical: 0° to 90° |
| | Detection number at the same time | Max. 20 vehicle |
| | Size of vehicle image | Min. size: 70 pix for the shorter axis (about 15-20 m ahead) Recommended size: 112 pix for the shorter axis |
| | Min. illumination level | 5 lux |
| Mask Area (non-detection area) | | Max. 8 areas (polygonal) can be set |

AI Occupancy Detection

- It counts the number of people in a specified area and issues an alarm when the number exceeds a specified threshold. Information of the number of people in the area can be output externally via HTTP or MQTT.

| | |
|---|---|
| Size of people image | Min. size: width 64 pixel (in case of S series 2MP model) |
| Detectable angle of view | Vertical: 0° to 45° |
| Max. number to detect at the same time | Max. 40 people |
| Detection Area | Max. 4 areas (polygonal) |
| Number of people to detect | 1 to 40 people/area |
| Detection time | 1 to 600 sec/area |
| Recommended location to install | Indoor |
| Min. illuminance | 50 lux |



*Example image of detection processing.

AI Scene Change Detection

- It can define/learn the normal scene for each camera and output an alarm when it is determined to be abnormal.



If the normal status is an empty area, the application will notify you when a stationary object is left behind.



If the normal status is a closed door, the application will notify you when the door is left open for a defined period of time.



If the normal status for a spot is set to "occupied", the application will notify you when the spot is vacant.



If the normal status is set to "full shelf", the application will notify you when the shelf is empty or low, as defined.

| | |
|--|---|
| Scene Change judgment method | The user trains the app with multiple images of normal scenes, and the app monitors the amount of pixel change from the trained images. It issues an alarm when the amount of pixel change exceeds a threshold for a specified time period. |
| Recommended location to install | Indoor |
| SD Memory Card | Required |
| Detection size | 5% or more of the width of the angle of view |
| Detection Area | Max. 16 areas (quadrilateral) |
| Detection time | 2 to 3600 sec/area |

AI Processing Relay

- It can be used when you want to add an AI function to an already installed camera. This software receives MJPEG data from other cameras, performs AI processing with AI Extension Software, and performs alarm reception and image search with i-PRO Active Guard.

| | | | | |
|------------------------------------|--|--|--|--|
| | WV-S71300-F3 (i-PRO Mini) Note : Camera function on install camera is not available. | | WV-X15xxx, WV-X22xxx, WV-X25xxx (New X series Camera) Note: Camera function is available. | |
| Input | 1 ch | | 3ch | |
| No. of apps to be installed | Up to 2 apps | | Up to 3 apps*1 | |
| Supported camera | i-PRO camera Other Company Camera Note : The camera must be able to output 1920x1080 or 1280x720 JPEG at 5fps. And you need to know JPEG Stream CGI and input it on "AI Processing Relay app" | | | |
| Received video format | Video format | JPEG | | |
| | Frame rate | Min. frame rate : 3 fps Recommended frame rate: 5 fps | | |
| | Resolution | 1920x1080 or 1280x720 | | |
| Available AI app | AI-VMD / AI People Detection / AI Vehicle Detection / AI Occupancy Detection / AI Scene Change Detection Note : The AI analysis performance depends on the image quality, so it will be a best effort. Please check it with cameras you use on site. | | | |
| Supported System | Video Insight / Genetec / Milestone / ASM300 with i-PRO Active Guard Note : For "ASM300 with i-PRO Active Guard" supports only i-PRO cameras. For "Genetec / Milestone with i-PRO Active Guard", AI-VMD / AI Occupancy Detection alarms are not supported because they do not go through i-PRO Active Guard. For "Video Insight with i-PRO Active Guard", AI Occupancy Detection alarms are not supported because they do not go through i-PRO Active Guard. | | | |

*1 For more details, refer AI apps compatibility in Accessory Selector (<https://i-pro.com/selector/accessory/>) or the Technical Information [C0103] (https://i-pro.com/products_and_solutions/en/surveillance/learning-and-support/knowledge-base/technical-information)

AI-VMD/AI People Counting for 360-degree fisheye camera

AI Video Motion Detection

- AI differentiates between vehicles and people, detecting and sending warning notifications when an intruder enters a specified area.
- **Intruder detection:**
Issues an alarm when a moving object enters a specified area.
- **Cross Line detection:**
Issues an alarm when an object moving in the specified direction crosses a specified threshold.
- **Loitering detection:**
Issues an alarm when a moving object enters a specified area and stays there for a specified amount of time.

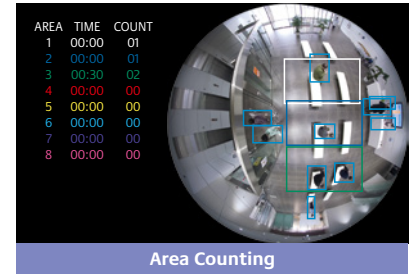


People Counting

- **Cross Line Counting:**
Counts the number of people moving in a specified direction and cross a specified threshold.
- **Area Counting (Queue Management):**
Counts the number of people in the set area.



Cross Line Counting



Area Counting

Heat map

- Heat mapping provides statistical information about traffic flow and keeps counts for people passing through and loitering in the area.



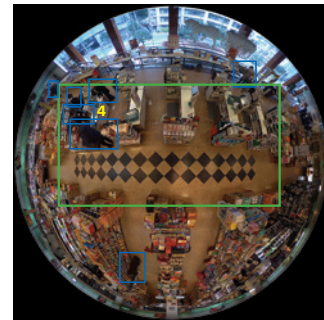
Passing



Loitering

Occupancy detection

- The network camera uses its AI engine to detect congestion, providing data that can be used to direct visitor traffic flow in advance or help staff work more efficiently.



AI Privacy Guard for 360-degree fisheye camera

AI Privacy Guard

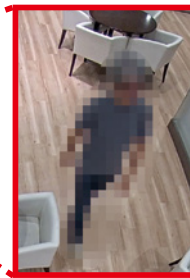
- AI can automatically mosaic faces and figures of people who are photographed to safeguard privacy and portrait rights.



Original image



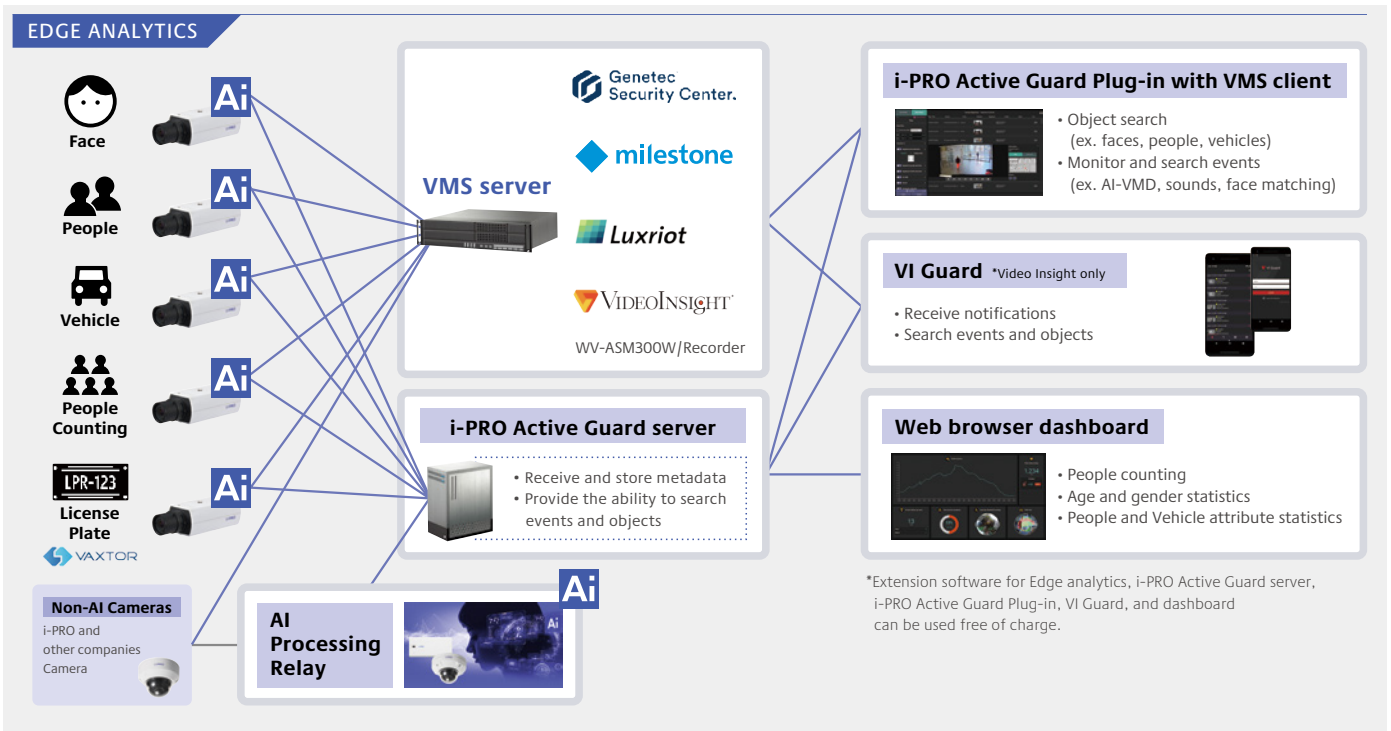
Processed image



i-PRO Active Guard

- The i-PRO Active Guard stores the best images and metadata captured by i-PRO network cameras, then collates this data with the watch list registered in the client software and issues an alarm when a match is found. The server does not require expensive hardware because i-PRO network cameras handle the advanced processing. The server can even be installed on the same hardware as the VMS. The system comprises the i-PRO Active Guard, the AI application installed on i-PRO network cameras utilizing AI engines, and i-PRO Active Guard Plug-in software for the VMS client.

Example of a basic system connection



Specification

| | | Video Insight system | Genetec system | Milestone system | WV-ASM300W / Network disk recorder system |
|---------------------------|--|---|---|---|---|
| Scale | Supported camera | i-PRO network camera with AI engine | | | |
| | Number of camera | 1 to 100 CH when installed with VMS server (AI Face Detection is up to 20) 1 to 300CH when installed in dedicated server (AI Face Detection is up to 60) | | 1 to 300CH when installed in dedicated server (AI Face Detection is up to 60) | 1 to 4CH when installed with WV-ASM300W (AI Face Detection is up to 4) 1 to 300CH when installed in dedicated server (AI Face Detection is up to 60) |
| | Number of client | No limitation (depending on limitation of VMS) | | | |
| | Number of Recording server | 12 VI IP servers | - (only main server should be registered) | - (Management server should be registered) | 12 Network disk recorders |
| | Number of i-PRO Active Guard server per a client | No limitation (depending on capability of whole system) | | | 100 |
| Supported AI applications | For plugin | AI-VMD / AI Sound Classification / AI Face Detection / AI People Detection / AI Vehicle Detection / AI Scene Change Detection / AI On-site Learning / Vaxtor ALPR, Vaxtor ALPR MMC | AI Face Detection / AI People Detection / AI Vehicle Detection / AI On-site Learning Vaxtor ALPR, Vaxtor ALPR MMC | AI Face Detection / AI People Detection / AI Vehicle Detection | AI-VMD / AI Sound Classification / AI Face Detection / AI People Detection / AI Vehicle Detection / AI Scene change detection / AI Occupancy Detection / AI On-site Learning / Vaxtor ALPR, Vaxtor ALPR MMC |
| | For dashboard | AI Face Detection, AI People Detection, AI Vehicle Detection, AI-VMD/AI People Counting for 360-degree fisheye camera, AI-VMD, AI Occupancy detection, AI On-site Learning, Vaxtor ALPR, Vaxtor ALPR MMC | | AI Face Detection, AI People Detection, AI Vehicle Detection, AI-VMD/AI People Counting for 360-degree fisheye camera, AI-VMD, AI Occupancy detection / AI On-site Learning / Vaxtor ALPR, Vaxtor ALPR MMC | |
| Store | Retention period | Max. 31 days limitation for face, people or vehicle data / Max. 92 days limitation for people counting data * Max. 366 days by upgrading SQL Server Standard edition or higher | | | |
| Post Search | Filter | People, Vehicle (attribute, date & time, camera, moving direction) Face (similar face, date & time and camera) LPR (License plate number, country, vehicle type, color, brand, model, moving direction, date & time, camera) | | | |
| | Similar search | People and vehicle (by same attribute information as detected ones), Face (search for similar faces), and LPR (license plate number) | | | |
| | Sort | Descending, Ascending, Relevance (Face, People, Vehicle and LPR) | | | |
| Alarm | Watch list alarm | Up to 1,000 faces, Up to 12 people attributes, Up to 12 vehicle attributes Up to 12 License plate group or attribute | | Up to 1,000 faces, Up to 12 people attributes, Up to 12 vehicle attributes | |
| | Detection alarm | AI Sound Classification (Gunshot / Yell / Vehicle horn / Glass break) AI-VMD (Intruder / Loitering / Direction / Line cross / On-site learning)/ LPR, VCA, Access Control / AI Scene change detection | AI-VMD, AI Sound Classification and LPR are supported in Genetec Security Center and Security Desk (not plugin) | AI Scene change detection *AI-VMD are supported in XProtect (not plug-in) | AI Sound Classification (Gunshot / Yell / Vehicle horn / Glass break) AI-VMD (Intruder / Loitering / Direction / Line cross / On-site learning)/ AI Occupancy detection / AI Scene change detection |
| | Related function | Show alarm on real-time, Alarm search, VMS's Rules configuration, Map overlay, Notification to mobile app, Manage alarm status | | | Alarm destination (plugin, camera, IO Unit or Custom HTTP) and alarm trigger can be configured. |
| Playback/ Export | Playback | Playback video around the time of the best shot on full and multi-view | Playback video around the time of the best shot on full screen | | |
| | Export video | Save best shot image, Export video from Recording server | | | |
| | Export Search result | HTML and CSV | HTML | HTML | HTML and CSV |
| Dashboard | Supported browser | Microsoft Edge, Google Chrome and Firefox | | | |
| | Chart | People counting, occupancy statistics and heatmap when using AI-VMD/AI People Counting for 360-degree fisheye camera. People counting, vehicle counting and on-site learning object counting when using AI-VMD. People counting and occupancy statistics when using AI Occupancy Detection. Data update interval is minimum 5 seconds for people/vehicle on-site learning object counting and 1 min for heat map. Age and gender statistics when using AI Face Detection. Data update interval is minimum 1 min. People attribute statistics when using AI People Detection. Data update interval is minimum 1 min. Vehicle attribute statistics when using AI Vehicle Detection. Data update interval is minimum 1 min. LPR counting when using LPR application. Data update interval is minimum 1 min. | | | |
| | Customize | Contents, display size, location for each chart. 3 Layouts per user can be saved and 24 user can be registered. (Up to 4 user can be log-in at the same time) Basic display color theme (dark or light) Line chart type (Straight line / Smoothed line), line/area name for counting | | | |

System requirement

| | | VMS | WV-ASM300 |
|--|--|--|--|
| i-PRO Active Guard server installed in dedicated server *Not support to install with Milestone XProtect | Up to 100 cameras *Camera with AI Face Detection is up to 60. | <ul style="list-style-type: none"> Intel® Core™ i7-9700 (4.9 GHz, 8 core 8 thread) or better 32 GB of RAM or more 64 bit operating system <ul style="list-style-type: none"> Microsoft® Windows 10 Pro Microsoft® Windows 10 Enterprise Microsoft® Windows 10 Education Microsoft® Windows 10 Pro Education Microsoft® Windows 10 IoT Enterprise *version 2004 or later Microsoft® Windows 11 Pro Microsoft® Windows 11 Enterprise Microsoft® Windows 11 Education Microsoft® Windows 11 Pro Education Microsoft® Windows 11 IoT Enterprise Microsoft® Windows Server 2016 Standard Microsoft® Windows Server 2019 Standard Microsoft® Windows Server 2022 Standard Microsoft® Windows Server 2016 Datacenter Microsoft® Windows Server 2019 Datacenter Microsoft® Windows Server 2022 Datacenter GbE network interface card | |
| | Up to 300 cameras *Camera with AI Face Detection is up to 60. | <ul style="list-style-type: none"> Intel® Xeon® Silver 4208 2.1 GHz (8 core 16 thread) or better 32 GB of RAM or more 64 bit operating system <ul style="list-style-type: none"> Microsoft® Windows Server 2016 Standard Microsoft® Windows Server 2019 Standard Microsoft® Windows Server 2022 Standard Microsoft® Windows Server 2016 Datacenter Microsoft® Windows Server 2019 Datacenter Microsoft® Windows Server 2022 Datacenter GbE network interface card | |
| i-PRO Active Guard server installed with VMS server | Up to 100 cameras | <ul style="list-style-type: none"> Intel® Xeon® Silver 4208 2.1 GHz (8 core 16 thread) or better 32 GB of RAM or more 64 bit operating system <ul style="list-style-type: none"> Microsoft® Windows Server 2016 Standard Microsoft® Windows Server 2019 Standard Microsoft® Windows Server 2022 Standard Microsoft® Windows Server 2016 Datacenter Microsoft® Windows Server 2019 Datacenter Microsoft® Windows Server 2022 Datacenter GbE network interface card | |
| i-PRO Active Guard server installed with ASM300 | Up to 4 cameras | | <ul style="list-style-type: none"> Intel® Core™ i7-10700 (4.8 GHz, 8 core 16 thread) or better 16 GB of RAM or more 64 bit operating system <ul style="list-style-type: none"> Microsoft® Windows 10 Pro version 20H2 or later, Microsoft® Windows 11 (64 bit) GbE network interface card Graphic: NVIDIA Quadro P1000, NVIDIA T1000 |

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- All other trademarks identified herein are the property of their respective owners.

Important

- Safety Precautions : Carefully read the Basic Information, Installation Guide and Operating Instructions before using this product.
- i-PRO Co., Ltd. cannot be held responsible for the performance of the network and/or other manufacturers' products used on the network.
- When monitoring remotely, please pay attention to the network design. For details, please contact your local i-PRO sales representatives.

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