

## IPC-HFW5541E-ZE

5MP Pro AI IR Vari-focal Bullet Network Camera



### Overview

Pro AI series contains Face Detection, Perimeter Protection and People Counting functions. Powered by deep-learning Artificial Intelligence algorithms, significantly improved accuracy. Meanwhile, the series features starlight and smart IR technology. This series fully protected from dust and water, certified to IP67 and vandal resistant to IK10 standard.

### Functions

#### Face Capture

Face capture is a software application that automatically captures faces from within a digital image or a video frame from a video source. The cameras use advanced deep learning algorithms and are trained by a large number of face data sources, enabling the camera to locate faces quickly and accurately from the video source and capture facial images.

#### Face Attributes

Through the use of deep learning algorithms to analyze facial images, The cameras can extract six facial attributes from each frame, including Age, Gender, Expression (Jolly/Surprise/Normal/Rage/Sad/Disgusted/Confused/Frightened), Glasses, Mouth Mask, Moustache & Beard. Customers can acquire data of interest via face attributes statistics.

#### People Counting

People Counting function uses advanced image processing technology to capture depth information from within images. The camera pairs this information with deep learning algorithms to analyze and detect human bodies and track target objects in real time. The camera provides statistics for separate individuals' entrance and exit with up to 95% counting accuracy.

#### Metadata

Metadata is feature attribute information extracted from a target object which can be used for data retrieval. Face detection camera can extract six facial attributes and output the metadata for analysis.

#### Wide Voltage Protection

Protection (IP67, IK10, wide voltage) The camera allows for  $\pm 30\%$  input voltage tolerance, suitable for the most unstable conditions for outdoor applications. Its 6KV lightning rating provides effective protection for both the camera and its structure against lightning.

### Technical Specification

#### Camera

|                            |  |
|----------------------------|--|
| Image Sensor               | 1/2.7" CMOS  |
| Max. Resolution            | 2960 (H) $\times$ 1668 (V)   |
| ROM                        | 4 GB   |
| RAM                        | 1 GB   |
| Scanning System            | Progressive  |
| Electronic Shutter Speed   | Auto/Manual 1/3 s–1/100,000 s  |
| Min. Illumination          | 0.0008 lux@F1.4 (Color, 30 IRE)<br>0.0004 lux@F1.4 (B/W, 30 IRE)<br>0 lux (Illuminator on) |
| S/N Ratio                  | >56 dB   |
| Illumination Distance      | Up to 60 m (196.85 ft) (IR)  |
| Illuminator On/Off Control | Auto; Zoomprio; Manual   |
| Illuminator Number         | 4 (IR LED)   |
| Angle Adjustment           | Pan: 0°–360°<br>Tilt: 0°–90°<br>Rotation: 0°–360°  |

#### Lens

|   |                                      |                        |                       |                       |                      |
|---|--------------------------------------|------------------------|-----------------------|-----------------------|----------------------|
| Lens Type   | Motorized vari-focal                 |                        |                       |                       |                      |
| Lens Mount  | $\phi 14$                            |                        |                       |                       |                      |
| Focal Length  | 2.7 mm–13.5 mm                       |                        |                       |                       |                      |
| Max. Aperture   | F1.4                                 |                        |                       |                       |                      |
| Field of View   | H: 114°–32°; V: 58°–17°; D: 138°–36° |                        |                       |                       |                      |
| Iris Control  | Auto                                 |                        |                       |                       |                      |
| Close Focus Distance  | 0.8 m (2.62 ft)                      |                        |                       |                       |                      |
| DORI Distance   | Lens                                 | Detect                 | Observe               | Recognize             | Identify             |
|   | W                                    | 64.0 m<br>(209.97 ft)  | 25.6 m<br>(83.99 ft)  | 12.8 m<br>(41.99 ft)  | 6.4 m<br>(20.99 ft)  |
|   | T                                    | 210.0 m<br>(688.98 ft) | 84.0 m<br>(275.89 ft) | 42.0 m<br>(137.80 ft) | 21.0 m<br>(68.90 ft) |
| *DORI (Detect, Observe, Recognize, Identify) is a standard system (EN-62676-4) for defining the ability of a person viewing the video to distinguish persons or objects within a covered area. The numbers in this table do not reflect intelligent function distances. For intelligent function distances, refer to installation and commissioning manual/project design tool. |                                      |                        |                       |                       |                      |

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### Intelligence

|                            |   |
|----------------------------|---|
| IVS (Perimeter Protection) | Intrusion, tripwire, fast moving (the three functions support the classification and accurate detection of vehicle and human); loitering detection, people gathering, and parking detection   |
| Smart Object Detection     | Smart abandoned object; smart missing object  |
| SMD                        | SMD 3.0   |
| AcuPick                    | Uses deep learning algorithms and works with back-end devices to accurately match targets, such as people and motor vehicles, and search through live and recorded videos to quickly locate targets.  |
| AI SSA                     | Yes   |
| Face Detection             | Face detection; track; snapshot; snapshot optimization; optimal face snapshot upload; face enhancement; face exposure; face attributes extraction including 6 attributes and 8 expressions; face snapshot set as face, one-inch photo or custom; snapshot strategies (real-time snapshot, quality priority and optimization snapshot); face angle filter; optimization time setting.  |
| People Counting            | Tripwire people counting, generating and exporting report (day/week/month/year); people counting in area and queue management; generating and exporting report (day/week/month); 4 rules can be set for tripwire, people counting in area and queue management.   |
| Heat Map                   | Yes   |
| Video Metadata             | Motor vehicle, non-motor vehicle, face, human body detection; track; snapshot; snapshot optimization; optimal face snapshot upload.<br>Motor vehicle attributes: vehicle type, vehicle color, vehicle logo and other attributes : seatbelt, smoking, calling.<br>Non-motor vehicle attributes: type, color, number of people, top type and color, hat.<br>Human body attributes: gender, top/bottom type and color, bag, hat and umbrella. Face attributes: gender, age, expressions, glasses, face mask and beard. |
| Smart Search               | Work together with Smart NVR to perform refine intelligent search, event extraction and merging to event videos   |
| Smart Sound Detection      | Yes   |

### Video

|                   |   |
|-------------------|---|
| Video Compression | H.265; H.264; H.264H; H.264B; MJPEG (Only supported by the sub stream)  |
| Smart Codec       | Smart H.265+; Smart H.264+  |
| AI Coding         | AI H.265; AI H.264  |
| Video Frame Rate  | Main stream: 2960 × 1668@ (1–25/30 fps)<br>Sub stream: D1@ (1–25/30 fps)<br>Third stream: 1080p@ (1–25/30 fps)<br>Fourth stream: 720p@ (1–25/30 fps)<br>*The values above are the max. frame rates of each stream; for multiple streams, the values will be subjected to the total encoding capacity. |
| Stream Capability | 4 streams   |

|                             |   |
|-----------------------------|---|
| Resolution                  | 5M (2960 × 1668); 5M (2880 × 1620); 4M (2688 × 1520); 3.6M (2560 × 1440); 3M (2048 × 1536); 3M (2304 × 1296); 1080p (1920 × 1080); 1.3M (1280 × 960); 720p (1280 × 720); D1 (704 × 576/704 × 480); VGA (640 × 480); CIF (352 × 288/352 × 240) |
| Bit Rate Control            | CBR/VBR   |
| Video Bit Rate              | H.264: 32 kbps–16384 kbps; H.265: 12 kbps–11776 kbps  |
| Day/Night                   | Auto(ICR)/Color/B/W   |
| BLC                         | Yes   |
| HLC                         | Yes   |
| WDR                         | 120 dB  |
| Scene Self-adaptation (SSA) | Yes   |
| White Balance               | Auto; natural; street lamp; outdoor; manual; regional custom  |
| Gain Control                | Auto  |
| Noise Reduction             | 3D NR   |
| Motion Detection            | OFF/ON (4 areas, rectangular)   |
| Region of Interest (RoI)    | Yes (4 areas)   |
| Image Stabilization         | Electronic Image Stabilization (EIS)  |
| Defog                       | Yes   |
| Image Rotation              | 0°/90°/180°/270° (Support 90°/270° with 4M (2688 × 1520) resolution and lower)  |
| Mirror                      | Yes   |
| Privacy Masking             | 8 areas   |
| LDC                         | Yes   |

### Audio

|                   |                                    |
|-------------------|------------------------------------|
| Built-in MIC      | Yes                                |
| Audio Compression | G.711a; G.711Mu; PCM; G.726; G.723 |

### Alarm

|             |  |
|-------------|--|
| Alarm Event | No SD card; SD card full; SD card error; network disconnection; IP conflict; illegal access; motion detection; video tampering; tripwire; intrusion; fast moving; abandoned object; missing object; loitering detection; people gathering; parking detection; scene changing; audio detection; voltage detection; external alarm; face detection; video metadata; SMD; people counting in area; stay detection; people counting; people number error detection; queue people number alarm; queue time alarm; security exception; defocus detection |
|-------------|--|

## IPC-HFW5541E-ZE

### 5MP Pro AI IR Vari-focal Bullet Network Camera

#### Network

|                     |   |
|---------------------|---|
| Network Port        | RJ-45 (10/100 Enhancement Base-T)   |
| SDK and API         | Yes   |
| Network Protocol    | IPv4; IPv6; HTTP; TCP; UDP; ARP; RTP; RTSP; RTCP; RTMP; SMTP; FTP; SFTP; DHCP; DNS; DDNS; QoS; UPnP; NTP; Multicast; ICMP; IGMP; NFS; SAMBA; PPPoE; SNMP; P2P   |
| Interoperability    | ONVIF (Profile S/Profile G/Profile T); CGI;   |
| User/Host           | 20 (Total bandwidth: 80 M)  |
| Storage             | FTP; SFTP; Micro SD card (support max. 512 GB); NAS   |
| Browser             | IE: IE 9 and later<br>Chrome: Chrome 102 and later<br>Firefox: Firefox 88 and later   |
| Management Software | SmartPSS Lite; DSS; DMSS  |
| Mobile Client       | iOS; Android  |
| Cyber Security      | Configuration encryption; trusted execution; Digest; security logs; WSSE; account lockout; syslog; video encryption; 802.1x; IP/MAC filtering; HTTPS; trusted upgrade; trusted boot; firmware encryption; generation and importing of X.509 certification |

#### Certification

|                |  |
|----------------|--|
| Certifications | CE-LVD: EN62368-1;<br>CE-EMC: Electromagnetic Compatibility Directive 2014/30/EU;<br>FCC: 47 CFR FCC Part 15, Subpart B;<br>UL/CUL: UL62368-1 & CAN/CSA C22.2 No. 62368-1-14 |
|----------------|--|

#### Port

|              |   |
|--------------|---|
| Audio Input  | 1 channel (RCA port)                      |
| Audio Output | 1 channel (RCA port)                      |
| Alarm Input  | 2 channels in: wet contact, 5 mA 3V-5V DC |
| Alarm Output | 1 channel out: wet contact, 300mA 12V DC  |

#### Power

|                   |  |
|-------------------|--|
| Power Supply      | 12 VDC/PoE (802.3af)/ePoE  |
| Dual Power Backup | When the power adapter and PoE provide power at the same time, disconnect one of them. The device will continue to work, but will not restart. |
| Power Consumption | Basic: 3.6 W (12 VDC); 4.7 W (PoE)<br>Max. (H.265+ WDR+ Intelligence on+IR on): 10.4 W (12 VDC); 13.0 W (PoE)                                  |

#### Environment

|                       |                                      |
|-----------------------|--------------------------------------|
| Operating Temperature | -30 °C to +60 °C (-22 °F to +140 °F) |
| Operating Humidity    | ≤95%                                 |
| Storage Temperature   | -40 °C to +60 °C (-40 °F to +140 °F) |
| Storage Humidity      | 10%-95% (RH), non-condensing         |
| Protection            | IP67; IK10                           |

#### Structure

|                    |  |
|--------------------|--|
| Casing Material    | Metal  |
| Product Dimensions | 273.2 mm × 95.0 mm × 95.0 mm (10.76" × 3.74" × 3.74")<br>(L × W × H) |
| Net Weight         | 1.12 kg (2.47 lb)  |
| Gross Weight       | 1.66 kg (3.66 lb)  |

#### Dimensions

