

DH-IPC-HFW2231T-ZS/VFS

2MP WDR IR Bullet Network Camera



- · 1/2.8" 2Megapixel progressive Starvis™ CMOS
- · H.265 & H.264 dual-stream encoding
- · 25/30fps@1080P(1920×1080)
- · WDR(120dB), Day/Night(ICR), 3DNR, AWB, AGC, BLC
- \cdot Multiple network monitoring: Web viewer, CMS(DSS/PSS) & DMSS
- · Micro SD card slot, up to 128GB
- · 2.7~13.5mm varifocal lens
- · Max IR LEDs Length 60m
- · IP67, IK10(optional), PoE













System Overview

The IR Megapixel Vari-focal camera delivers 2MP/4MP/5MP resolution with a 2.7 mm - 13.5 mm varifocal lens. The camera's elegant blend of aesthetics combined with a range of easy mounting solutions provides an excellent choice for a variety of small to mid-size applications at an affordable price.

Functions

Smart H.265+

Smart H.265+ is the optimized implementation of the H.265 codec that uses a scene-adaptive encoding strategy, dynamic GOP, dynamic ROI, flexible multi-frame reference structure and intelligent noise reduction to deliver high-quality video without straining the network. Smart H.265+ technology reduces bit rate and storage requirements by up to 70% when compared to standard H.265 video compression.

Starlight Technology

For challenging low-light applications, Dahua's Starlight Ultra-low Light Technology offers best-in-class light sensitivity, capturing color details in low light down to 0.006lux. The camera uses a set of optical features to balance light throughout the scene, resulting in clear images in dark environments.

Wide Dynamic Range (WDR)

The camera achieves vivid images, even in the most intense contrast lighting conditions, using industry-leading wide dynamic range (WDR) technology. For applications with both bright and low lighting conditions that change quickly, true WDR (120 dB) optimizes both the bright and dark areas of a scene at the same time to provide usable video.

Smart IR Technology

With IR illumination, detailed images can be captured in low light or total darkness. The camera's Smart IR technology adjusts the intensity of

camera's infrared LEDs to compensate the distance of an object. Smart IR technology prevents IR LEDs from whitening out images as they come closer to the camera. The camera's integrated infrared illumination provides high performance in extreme low-light environments up to 60m (197ft).

Protection (IP67, wide voltage)

The camera allows for $\pm 10\%$ input voltage tolerance, suitable for the most unstable conditions for outdoor applications. Its 2KV lightning rating provides effective protection for both the camera and its structure against lightning. Subjected and certified to rigorous dust and immersion tests (IP67), the camera is the choice for installation in even the most unforgiving environments.

Environmental

Dahua cameras operate in extreme temperature environments, rated for use in temperatures from-30° C to +60° C (-22° F to +140° F) with 95% humidity.

Image flip

Capturing unnecessary data such as surrounding hallway walls can increase storage requirements without any added value. The image flip feature allows the camera's image to be rotated in 90° increments for better video optimization.

Interoperability

The camera conforms to the ONVIF (Open Network Video Interface Forum) specifications, ensuring interoperability between network video products regardless of manufacturer.



| Camera Image Sensor 1/2.8" 2Megapixel progressive CMOS Effective Pixels 1920(H) x1080(V) RAM/ROM 256MB/32MB Scanning System Progressive Electronic Shutter Speed Auto/Manual, 1/3~1/100000s Minimum Illumination 0.006Lux/F1.4 (Color,1/3s, 30/RE) O.005Lux/F1.4 (Color,1/3s, 30/RE) O.005Lux/F1.4 (Color,1/3s, 30/RE) O.005Lux/F1.4 (Color,1/3s, 30/RE) IR Distance Distance up to 60m(197ft) IR Distance Electronic Mount Type Board-in Focal Length 2.7mm*13.5mm Max. Aperture F1.4 Angle of View H:106*~29*, V:57*~17* Focus Control Fixed Close Focus Distance O.3m DORI Distance M. Eens Detect Observe | Technical Sp | pecification | | | | |
|---|----------------------|---------------|---|------------|------------|-----------|
| Effective Pixels | | | | | | |
| Scanning System | 54111514 | | 1/2.8" 2Megapixel progressive CMOS | | | |
| Scanning System | - | | | | | |
| Electronic Shutter Speed | RAM/ROM | | | | | |
| Minimum Illumination | Scanning System | | Progressive | | | |
| Minimum Illumination O.05Lux/F1.4(R on) S/N Ratio More than50dB IR Distance Distance up to 60m(197ft) IR On/Off Control Auto/ Manual IR LEDs 4 Lens Lens Lens Type Electronic Mount Type Board-in Focal Length 2.7mm~13.5mm Max. Aperture F1.4 Angle of View H:106~29*, V:57*~17* Focus Control Fixed Close Focus Distance 0.3m DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 15m(49ft) PTZ T 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0* ~360*; Tilt:0* ~90*; Rotation:0* ~360* Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1220x1080)/SXGA(1280x1024)/1.3M(1280x 960)/704x7280x2288/352x240) Video Frame Rate | Electronic Shutte | er Speed | - | | | |
| IR Distance Distance up to 60m(197ft) IR On/Off Control Auto/ Manual IR LEDS 4 LenS Lens Type Electronic Mount Type Board-in Focal Length 2.7mm~13.5mm Max. Aperture F1.4 Angle of View H:106*~29*, V:57*~17* Focus Control Fixed Close Focus Distance 0.3m DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) T 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0*~360*, Tilt:0*~90*; Rotation:0*~360* Video Video Video Video Video Video Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 streams Video Video | | | 0.05Lux/F1.4(Color,1/30s,30IRE) | | | |
| R On/Off Control Auto/Manual R LEDs | S/N Ratio | | | | | |
| Lens Type | IR Distance | | Distance up to 60m(197ft) | | | |
| Lens Electronic Mount Type Board-in Focal Length 2.7mm~13.5mm Max. Aperture F1.4 Angle of View H:106*~29*, V:57*~17* Focus Control Fixed Close Focus Distance 0.3m DORI Distance Detect Observe Recognize Identify DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) PTZ T 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0* ~360*; Tilt:0* ~90*; Rotation:0* ~360* Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280x1024)/1.3M(1280x960)/YQA(640x480)CIF(352x288/352x240) PTAME Rate D1/CIF(1 ~25/30fps) Bit Rate Control CBR/VBR H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | IR On/Off Contro | ol | Auto/ Manual | | | |
| Electronic | IR LEDs | | 4 | | | |
| Mount Type Board-in Focal Length 2.7mm~13.5mm Max. Aperture F1.4 Angle of View H:106°~29°, V:57°~17° Focus Control Fixed Close Focus Distance 0.3m DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) DT 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan:0° ~360° ;Tilt:0° ~90° ;Rotation:0° ~360° Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280x1024)/1.3M(1280x960)/720P(1280x720)/D(1704x765/704x480)/VGA(640x480)ClF(352x288/352x2 | Lens | | | | | |
| Focal Length Max. Aperture F1.4 Angle of View H:106*~29*, V:57*~17* Focus Control Fixed Close Focus Distance 0.3m Lens Detect 0bserve Recognize Identify PM(30ft) T 153m(502ft) 61m(200ft) 9m(30ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0* ~360*; Tilt:0* ~90*; Rotation:0* ~360* Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Lens Type | | Electronic | | | |
| Max. Aperture | Mount Type | | Board-in | | | |
| Angle of View | Focal Length | | 2.7mm~13.5mm | | | |
| Fixed Close Focus Distance 0.3m Detect Observe Recognize Identify DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) T 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0° ~360°; Tilt:0° ~90°; Rotation:0° ~360° Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280x1024)/1.3M(1280x960)/YGA(640x480)CIF(352x288/352x240) Frame Rate 1080P(1220x1080)/SXGA(1280x1024)/1.3M(1280x960)/YGA(640x480)CIF(352x288/352x240) Frame Rate 1080P(1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Max. Aperture | Max. Aperture | | F1.4 | | |
| Close Focus Distance Detect Observe Recognize Identify DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) PTZ T 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0° ~360° ;Tilt:0° ~90° ;Rotation:0° ~360° Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Angle of View | | H:106°~29°, V:57°~17° | | | |
| Lens | Focus Control | | Fixed | | | |
| DORI Distance W 46m(150ft) 18m(59ft) 9m(30ft) 5m(16ft) PTZ Pan/Tilt Range Pan:0° ~360° ;Tilt:0° ~90° ;Rotation:0° ~360° Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280x720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Close Focus Dista | ance | 0.3m | | | |
| T 153m(502ft) 61m(200ft) 31m(102ft) 15m(49ft) PTZ Pan/Tilt Range Pan:0° ~360°; Tilt:0° ~90°; Rotation:0° ~360° Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | | Lens | Detect | Observe | Recognize | Identify |
| PTZ Pan/Tilt Range Pan:0° ~360° ;Tilt:0° ~90° ;Rotation:0° ~360° Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | DORI Distance | W | 46m(150ft) | 18m(59ft) | 9m(30ft) | 5m(16ft) |
| Pan/Tilt Range Pan:0° ~360°; Tilt:0° ~90°; Rotation:0° ~360° Video Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | | Т | 153m(502ft) | 61m(200ft) | 31m(102ft) | 15m(49ft) |
| Video Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280x720)/D1(704x576/704x480)/VGA(640x480)CIF(352x288/352x240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps H.264: 32K ~ 10240Kbps Auto(ICR) / Color / B/W | PTZ | | | | | |
| Compression H.265+/H.265/H.264+/H.264 Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280x720)/D1(704x576/704x480)/VGA(640x480)CIF(352x288/352x240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Pan/Tilt Range | | Pan:0° ~360° ;Tilt:0° ~90° ;Rotation:0° ~360° | | | |
| Streaming Capability 2 Streams Resolution 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Video | | | | | |
| 1080P(1920x1080)/SXGA(1280×1024)/1.3M(1280×960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) | Compression | | H.265+/H.265/H.264+/H.264 | | | |
| Resolution 960)/720P(1280×720)/D1(704×576/704×480)/VGA(640×480)CIF(352×288/352×240) Frame Rate 1080P (1 ~ 25/30fps) D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Streaming Capability | | 2 Streams | | | |
| Frame Rate D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Resolution | | 960)/720P(1280×720)/D1(704×576/704×480)/ | | | |
| D1/CIF(1 ~ 25/30fps) Bit Rate Control CBR/VBR Bit Rate H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | 5 | | 1080P (1 ~ 25/30fps) | | | |
| H.265: 12K ~ 6400Kbps H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Traille Nate | | D1/CIF(1 ~ 25/30fps) | | | |
| H.264: 32K ~ 10240Kbps Day/Night Auto(ICR) / Color / B/W | Bit Rate Control | | CBR/VBR | | | |
| | Bit Rate | | | | | |
| BLC / MDR(120dB) | Day/Night | | Auto(ICR) / Co | olor / B/W | | |
| | BLC Mode | | BLC / HLC / WDR(120dB) | | | |

| White Balance | Auto/Natural/Street Lamp/Outdoor/Manual | | |
|--|---|--|--|
| Gain Control | Auto/Manual | | |
| Noise Reduction | 3D DNR | | |
| Motion Detetion | Off / On (4 Zone, Rectangle) | | |
| Region of Interest | Off / On (4 Zone) | | |
| Electronic Image Stabilization(EIS) | N/A | | |
| Smart IR | Support | | |
| Digital Zoom | 16x | | |
| Flip | 0°/90°/180°/270° | | |
| Mirror | Off / On | | |
| Privacy Masking | Off / On (4 Area, Rectangle) | | |
| Audio | | | |
| Compression | N/A | | |
| Network | | | |
| Ethernet | RJ-45 (10/100Base-T) | | |
| Protocol | HTTP;TCP;ARP;RTSP;RTP;UDP;RTCP;SMTP;FTP;DHCP;DNS;DDNS;PPPOE;IPv4/v6;SNMP;QoS;UPnP;NTP | | |
| Interoperability | ONVIF, PSIA, CGI | | |
| Streaming Method | Unicast / Multicast | | |
| Max. User Access | 10 Users / 20 Users | | |
| Edge Storage | NAS Local PC for instant recording Micro SD Card 128GB | | |
| Web Viewer | IE, Chrome, Firefox, Safari | | |
| Management Software | Smart PSS, DSS, Easy4ip | | |
| Smart Phone | IOS, Android | | |
| Certifications | | | |
| Certifications | CE (EN 60950:2000) UI:UL60950-1 FCC: FCC Part 15 Subpart B | | |
| Interface | | | |
| Video Interface | N/A | | |
| Audio Interface | N/A | | |
| RS485 | N/A | | |
| Alarm | N/A | | |
| Electrical | | | |
| Power Supply | DC12V PoE (802.3af)(Class 0) | | |
| Power Consumption | <12.6W(-ZS), <12.6W(-VFS) | | |

Environmental

| Operating Conditions | -30° C $^{\sim}$ +60° C (-22° F $^{\sim}$ +140° F) / Less than 95% RH |
|----------------------|---|
| Strorage Conditions | -30° C ~ +60° C (-22° F ~ +140° F) / Less than 95% RH |
| Ingress Protection | IP67 |
| Vandal Resistance | IK10(optional) |

Construction

| Casing | Metal |
|--------------|---|
| Dimensions | 244.1mm×79mm×75.9mm (9.61"×3.11"×2.99") |
| Net Weight | 0.815kg (1.80lb) |
| Gross Weight | 1.08kg (2.38lb) |

| Ordering Information | | | | |
|---------------------------|--------------------------|---|--|--|
| Туре | Part Number | Description | | |
| 2MP camera | DH-IPC-HFW2231TP- ZS | 2MP WDR IR Bullet Network Camera, PAL | | |
| | DH-IPC-HFW2231TN- ZS | 2MP WDR IR Bullet Network Camera, NTSC | | |
| | IPC-HFW2231TP-ZS | 2MP WDR IR Bullet Network Camera, PAL | | |
| | IPC-HFW2231TN-ZS | 2MP WDR IR Bullet Network Camera, NTSC | | |
| | DH-IPC-HFW2231TP- VFS | 2MP WDR IR Bullet Network Camera, PAL | | |
| | DH-IPC-HFW2231TN- VFS | 2MP WDR IR Bullet Network Camera, NTSC | | |
| | IPC-HFW2231TP-VFS | 2MP WDR IR Bullet Network Camera, PAL | | |
| | IPC-HFW2231TN-VFS | 2MP WDR IR Bullet Network Camera, NTSC | | |
| Accessories (optional) | PFA135 | Junction box | | |
| | PFA152-E | Pole mount | | |
| | LR1002 | ePoE Over Coax Converter | | |

Accessories

Optional:







PFA135 Junction Box

PFA152-E Pole Mount

LR1002 ePoE Over Coax Converter

| Junction Mount | Pole Mount | |
|----------------|-------------------|--|
| PFA135 | PFA135 + PFA152-E | |
| | | |

Dimensions (mm/inch)



