Dahua TECHNOLOGY

4K HDCVI Security System

Twelve (12) 8MP HDCVI Eyeball Cameras with One (1) 16-channel Analytics+ 4K HDCVI DVR

HDCVI

Wiz Sense

WizSense Series devices combine Dahua's powerful Analytics+ with an intuitive and easy to use interface. WizSense devices offer Smart Motion Detection and Perimeter Protection functions that focus on human and vehicular images and ignore irrelevant images to capture important video while reducing false alarms. WizSense Series devices provide powerful general security for small to medium size businesses at a sensible price.

System Overview

The Dahua HDCVI Security System provides the components to quickly install a video security solution. The HDCVI cameras offer the clarity of 8MP video with True Wide Dynamic Range, and the HDCVI DVR offers built-in motion detection algorithms, alarm triggers, and customized recording modes. The cameras and the HDCVI DVR supports multiple video outputs making the kit compatible with many existing systems. The kit features Dahua's HDCVI technology that leverages an existing coaxial infrastructure, saving time and costs from running networking and power cables.

Functions

Perimeter Protection

Dahua Analytics+ includes Tripwire and Intrusion functions that offer custom tripwires based on object type for automation in limited access areas. Perimeter Protection requires less pixels to detect an object to deliver improved accuracy and decreased false alarms due to lights, weather, trees, or animals.

Smart Motion Detection

The Smart Motion Detection, a component of Dahua's Analytics+ technology, improves alarm accuracy and decreases the number of false alarms. The advanced SMD algorithm analyzes a scene for human or vehicle motion, while filtering out other motion due to trees, leaves, animals, weather, and triggers an alarm when detected.

AI Coding

The AI Coding function puts recording emphasis on human or vehicular objects in the video scene. This technology, based on constant bit rate (CBR), dynamically allocates increased bit rate to the target object while reducing the bit rate allocated to background objects. AI Coding reduces bit rate and storage requirements by up to 50% when compared to the H.265 video compression standard.

HDCVI Cameras

- 1/2.7-in. 8MP Progressive-scan CMOS Sensor
- 3840 x 2160 at 15 fps Maximum Resolution, 2.8 mm Fixed Lens
- Maximum IR Length 30 m (98.43 ft), Smart IR
- IP67 Ingress Protection

HDCVI DVR

- 4 TB Pre-installed Hard Disk Drive
- 16-channel Penta-brid Recorder, Dual-streaming
- Smart H.265+ and Smart H.264+ Dual Codec
- 4K at 15 fps Recording Resolution on All HDCVI Channels
- AI Coding Technology for High-quality Human/Vehicle Video
- Perimeter Protection and Smart Motion Detection (SMD)

Flexible Recording

The HDCVI DVR offers a variety of configurable recording options and schedules that saves HDD space and active monitoring time. The HDCVI DVR monitors incoming video and can be programmed to record if motion is detected or if an alarm is triggered. The HDCVI DVR can also be programmed to record on a schedule or at different intervals. The recording options and schedules can be set for each individual camera or copied to all cameras.

Long Distance Transmission

HDCVI technology guarantees real-time transmission over long distances without loss of video quality. HDCVI devices provide the same resolution as most IP network camera systems using existing RG-59, RG-6, or CAT 6 UTP cabling.

Multi-format Support

The camera and HDCVI DVR supports multiple video formats including, HDCVI, CVBS, AHD, and TVI. The camera can switch between these four formats via the OSD menu or the switch located on the video output cable making the camera compatible with not only HDCVI DVRs but also most existing HD/SD DVRs. The HDCVI DVR automatically recognizes the incoming signals of each attached camera without any setup, making installation easy and operation convenient.

Environmental

With a temperature range of −40° C to +60° C (−40° F to +140° F), the cameras are designed for extreme temperature environments. The cameras, subjected to rigorous dust and water immersion tests, are certified to the IP67 rating making them suitable for demanding outdoor applications.

The HDCVI DVR features an operating temperature of −10° C to +55° C (+14° F to +131° F).

Technical Specification

A81AJ22 8MP HDCVI Eyeball Camera

Camera

Image Sensor	1/2.7-in. CMOS Sensor
Effective Pixels	3840 (H) x 2160 (V), 8MP
Scanning System	Progressive
Electronic Shutter Speed	1/3 s to 1/100,000 s
Minimum Illumination	Color: 0.03 lux at F2.0, 30 IRE 0 lux with IR on
S/N Ratio	> 65 dB
IR Distance	Up to 30.0 m (98.43 ft)
IR On/Off Control	Auto, Manual
IR LEDs	One (1)

Lens

Lens Type	Fixed-focal
Mount Type	M12
Focal Length	2.8 mm
Maximum Aperture	F2.0
Angle of View	Horizontal: 105° Vertical: 56° Diagonal: 125°
Iris Type	Fixed
Close Focus Distance	1000.0 mm (3.28 ft)

Pan / Tilt / Rotation

Pan/Tilt/Rotation	Pan: 0° to 360° Tilt: 0° to 78° Rotation: 0° to 360°

DORI Distances[1]

Detect (8 ppf)	Observe (19 ppf)	Recognize (38 ppf)	Identify (76 ppf)
75 m (246 ft)	30 m (98 ft)	15 m (49 ft)	8 m (26 ft)

Video

Resolution Output	8MP (3840 x 2160), 5MP (2592 x 1944), 4MP (2560 x 1440) 960H (960 x 480)	
Frame Rate	HDCVI	8MP at 15 fps 5MP at 20 fps 4MP at 30 fps
	TVI	8MP at 15 fps 5MP at 20 fps 4MP at 30 fps
	AHD	8MP at 15 fps 5MP at 20 fps 4MP at 30 fps
	CVBS	NTSC
Video Output	One (1) BNC Output, HDCVI, AHD, TVI, CVBS switchable	

Video Transmission[2]	RG-59/U Coax	720p: 800 m (2624.67 ft) 1080p: 500 m (1640.42 ft) 4K: 500 m (1640.42 ft)
	RG-6/U Coax	720p: 1200 m (3937.01 ft) 1080p: 800 m (2624.67 ft) 4K: 700 m (2296.59 ft)
	CAT 6 UTP (balun required)	720p: 450 m (1476.38 ft) 1080p: 300 m (984.25 ft) 4K: 300 m (984.25 ft)
Day/Night		Auto (ICR)
OSD Menu		Multi-language
BLC Mode		BLC, HLC, True WDR
WDR		120 dB
Gain Control		Auto, Manual
Noise Reduction		2D, 3D
White Balance		Auto, Manual
Advanced Features		Smart IR, Electronic Defog

Certifications

CE	EN55032 EN55024 EN50130-4
Safety	UL60950-1 CAN/CSA C22.2 No.60950-1
Electromagnetic Compatibility (EMC)	CFR 47 FCC Part 15 subpart B ANSI C63.4-2014

Electrical

Power Supply	12 VDC ± 30%
Power Consumption	Maximum 5.2 W (12 VDC, IR on)

Environmental

Operating Conditions	−40° C to +60° C (−22° F to +140° F) Less than 95% RH, non-condensing
Storage Conditions	−40° C to +60° C (−22° F to +140° F) Less than 95% RH, non-condensing
Ingress Protection	IP67

Construction

Casing	Metal
Dimensions	ø94.0 mm x85.60 mm (ø3.70 in. x 3.37 in.)
Net Weight	0.31 kg (0.68 lb)
Gross Weight	0.44 kg (0.97 lb)

1. The DORI distance is a measure of the general proximity for a specific classification to help pinpoint the right camera for your needs. The DORI distance is calculated based on sensor specifications and lab test results according to EN 62676-4 , the standard that defines the criteria for the Detect, Observe, Recognize and Identify classifications.
2. Transmission distance results verified by real-scene testing in Dahua's test laboratory. Actual transmission distances may vary due to external influences, cable quality, and wiring structures.

Technical Specification

X82R3N4 16-channel HDCVI DVR with Analytics+

System

Main Processor	Embedded Processor
Operating System	Embedded LINUX

Analytics+ Perimeter Protection[1]

Performance	• Human and Vehicle object classification • Decreased false alarms from leaves, lights, animals • Configure Perimeter Protection on six (6) channels • 10 Tripwire/Intrusion rules per channel
Live View	• Configure Rule and Object Inspection area • Display object classification, event types, trigger time, image snapshot, and object types • Export event playback 10 seconds prior to or after event
Playback	• Search by channel, time, event type, and target type • Search event playback 10 seconds prior to or after event • Snapshot capacity: 500,000

Analytics+ Smart Motion Detection[1]

Performance	• Detect motion based on object classification (human or vehicle) • Decreased false alarms from leaves, lights, animals • Configure functions on 16 channels
Preview	• Configure and inspect detection area
Playback	• Search by channel, time, event type, and target type • Search event playback 10 seconds prior to or after event

Interface

Analog Camera Input	16 Channels, BNC
HDCVI	8MP, 6MP, 5MP, 4MP, 1080p, 720p
AHD	8MP, 5MP, 4MP, 3MP, 1080p, 720p
TVI	8MP, 5MP, 4MP, 3MP, 1080p, 720p
CVBS	NTSC
IP Camera Input[2]	16+16 Channels, each channel up to 8MP
Audio	Input: One(1) Channel, RCA Output: One (1) Channel, RCA
Two-way Talk	Audio Input Channel 1 In/ Audio Output, RCA

Recording

Compression		AI Coding, Smart H.265+, H.265, Smart H.264+, H.264
Recording Resolution		8MP, 6MP, 5MP, 4K-N, 4MP, 3MP, 1080p, 720p, 960H, D1, CIF
Record Rate	Main Stream	8 MP at 15 fps; 6 MP/5 MP at 20 fps; 4K-N, 4MP, 3MP, 1080p, 720p, 960H, D1, CIF at 30 fps
	Sub Stream	960H, D1, CIF at 30 fps
Max. Incoming Bandwidth		128 Mbps
Bit Rate		32 Kbps to 8192 Kbps per Channel
Record Mode		Manual, Schedule (Regular, Continuous), MD (Video Detection: Motion Detection, Video Loss, Tampering), Alarm, Stop
Record Interval		1 to 60 minutes (default: 60 minutes), Pre-record: 1 s to 30 s, Post-record: 10 s to 300 s
Audio Compression		G.711a, G.711Mu, PCM
Audio Sample Rate		8 KHz, 16 bits per Channel
Audio Bit Rate		64 Kbps per Channel

Display

Interface		One (1) HDMI (3840 x 2160) One (1) VGA (1920 x 1080) One (1) BNC
Spot Output		HDMI or VGA, configurable (HDMI: 1920 x 1080,1280 x 1024, 1280 x 720 VGA: 1920 x 1080,1280 x 1024, 1280 x 720)
Native Output Resolution	HDMI	3840 x 2160, 2560 x 1440, 1920 x 1080, 1280 x 1024, 1280 x 720
	VGA	1920 x 1080, 1280 x 1024, 1280 x 720
Maximum Playback Decoding		16 Channels of 720p at 30 fps 16 Channels of 1080p at 15 fps Eight (8) Channels of 8MP at 7 fps Eight (8) Channels of 6MP or 5MP at 13 fps Eight (8) Channels of 4K-N/4MP/3MP at 15 fps Eight (8) Channels of 1080p, 720p, 960H at 30 fps Four (4) Channels of 8MP at 15 fps Four (4) Channels of 6MP at 20 fps Four (4) Channels of 5MP at 25 fps Four (4) Channels of 4MP, 3MP, 1080p, 720p at 30 fps One (1) Channel of 8MP at 30 fps
Multi-screen Display		IP extension mode disabled: 1/4/8/9/16 IP extension mode enabled: 1/4/8/9/16/25/36
Fisheye Dewarp		Supported via Web Interface
On-screen Display		Camera Title, Time, Video Loss, Camera Lock, Motion Detection, Recording

Network

Interface	One (1) RJ45 (1000 Mbps) Port
Network Function	HTTP, TCP/IP, IPv4/IPv6, UPnP, RTSP, UDP, SMTP, NTP, DHCP, DNS, IP Filter, PPPoE,DDNS, FTP, Alarm Server, P2P, IP Search (Supports Dahua IP cameras, DVRs, NVS)
Maximum User Access	128 Users
Mobile Operating System	IOS, Android
Interoperability	ONVIF 16.12, CGI Conformant

Video Detection and Alarm

Trigger Events	Recording, PTZ, Tour, Video Push, Email, FTP, Snapshot, Buzzer and Screen Tips
Video Detection	Motion Detection, MD Zones: 396 (22 × 18), Video Loss, Tampering, and Diagnosis

Playback and Backup

Playback	1/4/9/16
Search Mode	Time/Date, Alarm, MD and Exact Search (accurate to 1 second)
Playback Function	Play, Pause, Stop, Rewind, Fast Play, Slow Play, Next File, Previous File, Next Camera, Previous Camera, Full Screen, Repeat, Shuffle, Backup Selection, and Digital Zoom
Backup Mode	USB Device/Network

Storage

Internal HDD	Two (2) SATA Ports, up to 10 TB capacity for each disk Kit ships with a 4 TB Hard Disk Drive

Auxiliary Interface

USB	One (1) USB 2.0 Port and One (1) USB 3.0 Port
RS485	One (1) Port for PTZ Control

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1. The Analytics+ functions are disabled when the additional 17 to 32 IP channels are active. If channel 15 and 16 connect to an IP camera, the Analytics+ functions can be used on analog channels 1 to 14.
2. The recording rate is dependent on the maximum resolution and frame rate of the connected IP camera.

X82R3N4 Technical Specification, continued

Electrical

Power Supply	12 VDC, 5 A
Power Consumption	< 32 W, without HDD

Construction

Dimensions	
HDCVI DVR	1U, 375.0 mm x 332.0 mm x 53.0 mm (14.76 in. x 13.0 in. x 2.09 in.)
with PFH101 Rack Mount Tray	482.6 mm x 287.0 mm x 53.0 mm (19.0 in. x 11.30 in. x 2.09 in.)
Net Weight	2.40 kg (5.40 lb)
Gross Weight	4.0 kg (8.80 lb)
Installation	Desktop or Rack-mount

Video Transmission Distance

RG-59/U Coax	720p: 1080p: 4K/4MP:	800 m (2624.67 ft) 500 m (1640.42 ft) 500 m (1640.42 ft)
RG-6/U Coax	720p: 1080p: 4K/4MP:	1200 m (3937.01 ft) 800 m (2624.67 ft) 700 m (2296.59 ft)
CAT 6 UTP (balun required)	720p: 1080p: 4K/4MP:	450 m (1476.38 ft) 300 m (984.25 ft) 300 m (984.25 ft)

Environmental

Operating Conditions	−10° C to +55° C (+14° F to +131° F), 0% to 90% RH
Storage Conditions	−20° C to +70° C (−4°F to +158° F), 0% to 90% RH

Third-party Support

Third-party Support	Dahua, Arecont Vision, AXIS, Bosch, Brickcom, Canon, CP Plus, Dynacolor, Honeywell, Panasonic, Pelco, Samsung, Sanyo, Sony, Videotec, Vivotek, and others

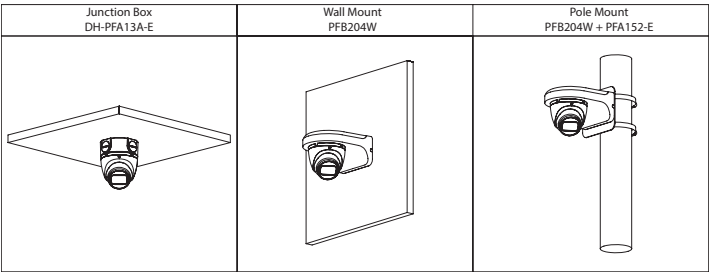### Certifications

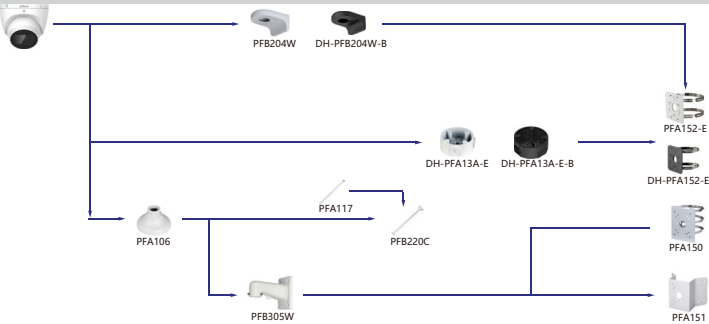|	
Safety	EN 60950-1 IEC 60950-1
Electromagnetic Compatibility (EMC)	CFR 47 FCC Part 15 Subpart B EN 61000-3-2 EN 61000-3-3 EN 55032 EN 50130 EN 55024

Ordering Information

Type	Part Number	Description
4K HDCVI Security System	C868E124A	
	• A81AJ22	8 MP HDCVI IR 2.8 mm Fixed Lens Eyeball Camera (x12)
	• X82R3N4	16-Channel Penta-brid 4K, 1U, 4 TB Digital Video Recorder (x1)
Camera Accessories, optional	PFA106	Mount Adapter (For use with PFB305W wall mount)
	PFA13A-E	Junction Box (For use alone or with PFA152-E pole mount)
	PFA150	Pole Mount (For use with PFA106 and PFB305W)
	PFA151	Corner Mount (For use with PFA106 and PFB305W)
	PFA152-E	Pole Mount (For use with PFB204W wall mount)
	PFA200G	Gang Box Adapter
	PFB204W	Wall Mount (For use alone or with PFA152-E pole mount)
	PFB220C	Ceiling Mont (For use with PFA106)
	PFB305W	Wall Mount (For use with PFA106)
	DH-PFM321D-US	12 VDC, 1 A Power Adapter
	DH-PFM800-4K	4K Passive HDCVI Balun
DVR Accessory, optional	PFH101	Rack Mount Tray 482.60 mm x 281.20 mm x 43.7 mm (19.0 in. x 11.07 in. x 1.72 in.)

Package Contents (individual devices ship with the following:)

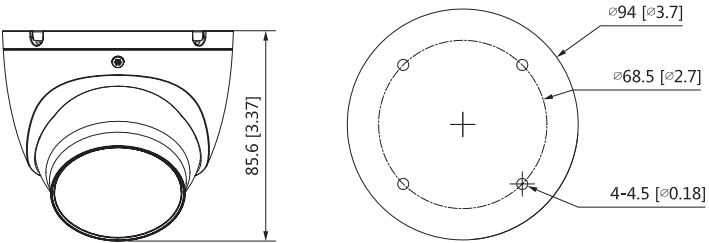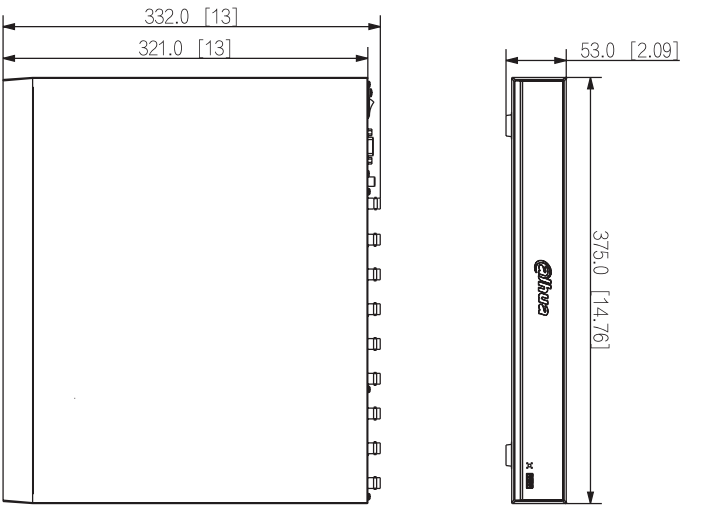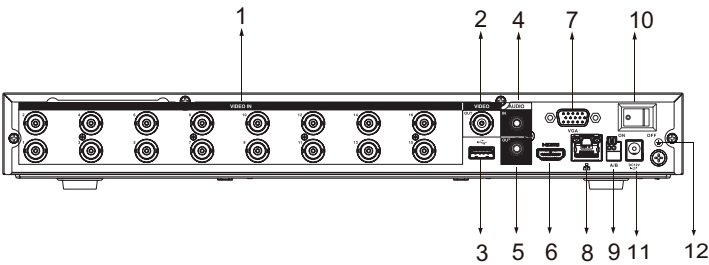| Product	Material
HDCVI Cameras	Printed Manual Printed Regulatory Guide Plastic Wall Anchors with Screws (x3) Mounting Template
Storage Device	Quick Network Guide Printed Manual Printed Regulatory Guide Mouse Adapter Power Adapter with Power Cord Ethernet Cable, RJ45 Alarm Cable Molex Units (x3) Screws (x4)

Camera Accessories

Optional:

PFA106 Mount Adapter	DH-PFA13A-E Junction Box	PFA150 Pole Mount	PFA151 Corner Mount
PFA152-E Pole Mount	DH-PFA200G Gang Box Adapter	PFB204W Wall Mount	PFB220C Ceiling Mount
PFB305W Wall Mount	DH-PFM321D-US 12 VDC, 1 A Power Adapter	DH-PFM800-4K Passive HDCVI Balun	

Junction Box DH-PFA13A-E	Wall Mount PFB204W	Pole Mount PFB204W + PFA152-E

A81AJ22 Mounting Diagram

A81AJ22 Dimensions (mm/in.)

X82R3N4 Dimensions (mm/in.)

332.0 [13]
321.0 [13]
53.0 [2.09]
375.0 [14.76]

Rear Panel

1	Video Input (x16 BNC)	7	VGA Output
2	Video Output (x1 BNC)	8	RJ45 Ethernet Port (1000 Mbps)
3	USB Port	9	RS485 Port
4	Audio Input (x1 RCA)	10	Power Switch
5	Audio Output (x1 RCA)	11	Power Input
6	HDMI Output	12	Ground