

4K Penta-brid HDCVI DVR

16-Channel 2U Digital Video Recorder with Analytics+



System Overview

The X88A Series HDCVI DVR offers 4K recording on each HDCVI channel and a host of advanced features and functions. The X88A takes advantage of HDCVI technology for easy integration into existing video surveillance systems while leveraging existing networks, cabling, and cameras. Penta-brid access technology seamlessly records video from HDCVI, AHD, TVI, CVBS, and IP sources simultaneously, plus the DVR delivers 4K resolution on each HDCVI or IP channel.

The Dahua Analytics+ algorithms significantly improve accuracy and reliability, as compared to standard intelligent features. The recorder offers advanced perimeter protection that distinguishes between human and vehicular violations, and real-time Facial Recognition with metadata that captures a person's gender, age, and if the person is wearing glasses or a mask. This recorder is the ideal solution for actively monitoring public venues, retail stores, transportation hubs and access ways, personal property and homes, and educational institutions.

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.

Real-time Face Recognition

Analytics+ performs real-time facial recognition on up to four (4) streaming video channels simultaneously. The server captures and analyzes facial features to determine gender, age, expression, glasses, moustache, and mask, and then can record the faces and store the associated structured data. The server also filters incoming video to display faces that match target features.

Face Database Management

In addition to storing 100,000 facial images, the NVR database also stores names, genders, birthdays, nationality, address, and ID information associated with each facial image. The NVR also offers powerful and configurable database management features that can be applied to each face recognition channel independently.

- 4K at 7 fps Recording Resolution on All HDCVI Channels
- Dual-stream Video Recording
- Smart H.265+ and Smart H.264+ Dual Codecs
- Auto-detection and Auto-configuration of Video Inputs
- 16+48 IP Camera Channels, each channel up to 12 MP
- Maximum 256 Mbps Incoming Bandwidth
- Supports RAID 0, 1, 5, 6, 10
- Analytics+ Functions: Face Recognition and Perimeter Protection
- Spot Output (HDMI 2 Output)
- Five-year Warranty*



Stranger Mode

The NVR supports two facial detection modes: Common and Stranger. In Stranger mode, when the NVR detects a face not stored in the device's database, it can trigger an alarm, a buzzer, take a snapshot, or initiate recording. It also incorporates a Similarity Threshold, where the server triggers an alarm for a face that does not match a minimum recognition level. The Stranger Mode and the Similarity Threshold are designed for critical infrastructure sites where access control is of vital importance.

Efficient Search

The NVR searches images by facial features to improve search efficiency. The server support uploading and storing 20,000 facial images for comparison with recorded faces. This search capability allows operators to quickly and easily search multiple channel recordings to determine when and where a person of interest appeared in a recording.

4K Resolution

The HDCVI DVR records 4K resolution on each HDCVI and IP channel. 4K is a revolutionary breakthrough in image processing technology. 4K delivers four times the resolution of standard HDTV 1080p cameras and offers superior picture quality and image details. 4K resolution improves the clarity of a magnified scene to view or record crisp forensic video from large areas.

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 90% when compared to the H.264 video compression standard.

HDCVI/AHD/TVI/CVBS Auto-detect

The HDCVI DVR automatically recognizes the incoming signals of each attached camera without any setup, making installation easy and operation convenient.

Spot Output

The HDCVI DVR provides a spot output channel for a secondary monitor. This monitor allows the operator to view one monitor that is assigned to selected cameras or video inputs from high-security areas.

Technical Specification

System

Main Processor	Embedded Processor
Operating System	Embedded LINUX

Analytics+ Perimeter Protection^{1,2}

Performance	<ul style="list-style-type: none"> Human and Vehicle object classification Decreased false alarms from leaves, lights, animals Configure function on 16 channels, 10 Tripwire/Intrusion rules per channel
Object Classification	<ul style="list-style-type: none"> Human or Vehicle Secondary Recognition for Tripwire and Intrusion
Search	<ul style="list-style-type: none"> Search by object classification (human or vehicle)

Analytics+ Face Recognition^{1,2}

Performance	<ul style="list-style-type: none"> Process 24 facial images per second Total of six (6) channels: up to four (4) analog channels and up to two (2) IP channels
Stranger Mode	<ul style="list-style-type: none"> Detects a face not stored in the database. Similarity Threshold set manually
Search by Image	<ul style="list-style-type: none"> Up to eight (8) target face image searches simultaneously Supports Similarity Threshold for each target face image
Database Management	<ul style="list-style-type: none"> 20 Face Databases 100,000 total face images Stores name, gender, birthday, nationality, address, ID information for each face picture
Database Application	Each database can be applied to video channels independently.
Trigger Events	Buzzer, Voice Prompts, Email, Snapshot, Recording, Alarm Out, PTZ Activation

Interface

Analog Camera Input	16 Channels, BNC
HDCVI	8 MP, 6 MP, 5 MP, 4 MP, 1080p at 30 fps, 720p at 30 fps
AHD	5 MP, 4 MP, 3 MP, 1080p at 30 fps, 720p at 30 fps
TVI	5 MP, 4 MP, 3 MP, 1080p at 30 fps, 720p at 30 fps
CVBS	NTSC
IP Camera Input	16+48 Channels, each channel up to 12 MP
Audio	Input: 16 Channels, BNC Output: One (1) Channel, BNC
Two-way Talk	Input: One (1) Microphone, BNC Output: One (1) Channel, BNC

Recording

Compression	Smart H.265+, H.265, Smart H.264+, H.264	
Recording Resolution	8 MP, 6 MP, 5 MP, 4 MP, 3 MP, 4 M-N, 1080p, 720p, 960H, D1, CIF, QCIF	
Record Rate	Main Stream	8 MP at 7 fps; 6 MP at 10 fps, 5 MP at 12 fps, 4 MP or 3 MP at 15 fps, 4 M-N, 1080p, 720p, 960H, D1, CIF, or QCIF at 30 fps
	Sub Stream	960H at 15 fps; D1, CIF, or QCIF at 30 fps
Maximum Incoming Bandwidth	256 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 to 30 s, Post-record: 10 to 300 s	

Audio

Audio Compression	AAC (first channel only), G.711a, G.711u, PCM
Audio Sample Rate	8 KHz, 16 bits per Channel
Audio Bit Rate	64 Kbps per Channel

Display

Interface	Two (2) HDMI (3840 x 2160) ports One (1) VGA (1920 x 1080) port One (1) TV port, BNC	
Spot Output	HDMI 2	
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 4K at 7 fps Eight (8) Channels of 6 MP at 10 fps Eight (8) Channels of 5 MP at 12 fps 16 Channels of 4 MP/3 MP at 15 fps 16 Channels of 4 M-N/1080p/720p at 30 fps	
Multi-screen Display	IP extension mode disabled: 1/4/8/9/16 IP extension mode enabled: 1/4/8/9/16/25/36/64	
On-screen Display	Camera Title, Time, Video Loss, Camera Lock, Motion Detection, Recording	

Network

Interface	Two (2) RJ-45 (1000 Mbps) Ports
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 x 18), Video Loss, Tampering, and Diagnosis
Alarm Input	16 Channels
Relay Output	Six (6) Channels

1. Only one (1) Analytics+ function (Face Detection/Recognition or Perimeter Protection) or IVS can be enabled on a channel at one time.
2. The HDCVI DVR allows the following maximum simultaneous analytic functions: 16 channels with IVS and four (4) channels with Face Detection/Recognition or Perimeter Protection.

Playback and Backup

Playback	1/4/8/16
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	Eight (8) SATA Ports, up to 10 TB capacity for each disk
eSATA	One (1) Port
Raid Support	0, 1, 5, 6, 10

Auxiliary Interface

USB	Two (2) USB 2.0 Ports and Two (2) USB 3.0 Ports
RS485	One (1) Port for PTZ Control
RS232	One (1) Port for PC Communication and Keyboard

Electrical

Power Supply	100 VAC to 240 VAC, 50/60 Hz
Power Consumption	< 20 W, without HDD

Construction

Dimensions	2U, 440.0 mm x 455.0 mm x 95.0 mm (17.32 in. x 17.91 in. x 3.77 in.)
Net Weight	6.90 kg (15.21 lb), without HDD
Gross Weight	9.80 kg (21.61 lb)
Installation	Desktop

Video Transmission Distance

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

Environmental

Operating Conditions	-10° C to +55° C (+14° F to +131° F), 10% 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
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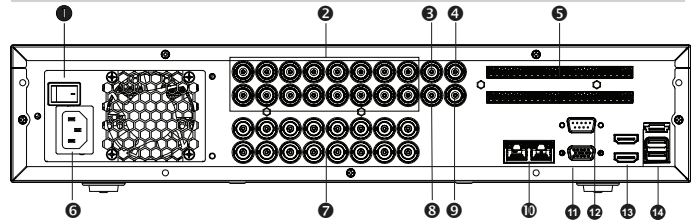
Certifications

Safety	EN 60950-1 IEC 60950-1
Electromagnetic Compatibility (EMC)	FCC CFR 47 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 DVR with Analytics+	X88A3S4	16-channel Penta-brid 4K 2U,4 TB Digital Video Recorder with Analytics+
	X88A3S8	16-channel Penta-brid 4K 2U,8 TB Digital Video Recorder with Analytics+
	X88A3S10	16-channel Penta-brid 4K 2U,10 TB Digital Video Recorder with Analytics+

Rear Panel



1	Power Switch	8	Two-way Talk Output, BNC
2	Audio Input, BNC (x16)	9	Video Output, BNC
3	Microphone Input, BNC	10	Ethernet Port, RJ-45 (x2)
4	Audio Output, BNC	11	VGA Output
5	Alarm I/O, RS485, RS422	12	RS232 Port
6	Power Input	13	HDMI 1 Output HDMI 2 Output
7	Video Input, BNC (x16)	14	eSATA Port (top) USB Port (x2)

Dimensions

