

1080p H.265 Penta-brid HDCVI DVR

16+8-Channel Mini 1U HDCVI Digital Video Recorder



- Embedded Processor
- Smart H.265+ and Smart H.264+ Dual Codec
- Dual-stream Recording
- 5 M-N (1296 x 1944) at 10 fps Maximum Recording Resolution
- 16 HDCVI, AHD, TVI, CVBS Channels
- 16 + 8 IP Channels, up to 6 MP per Channel
- Maximum 96 Mbps Incoming Bandwidth
- Built-in Smart Search
- Intelligent Video System
- One (1) SATA HDD Port, up to 10 TB per Hard Disk Drive
- Five-year Warranty*

System Overview

The X51A Series HDCVI DVR offers 1080p recording on each HDCVI channel and a host of advanced features and functions. The X51A 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.

The X51A utilizes the Smart H.265+ Codec to significantly improve encoding efficiency and to reduce bandwidth and storage costs. This recorder is the ideal solution for actively monitoring and recording video feeds in a wide range of applications including public venues, retail stores, transportation hubs and access ways, personal property and homes, and educational institutions.

Camera Connections

Record and monitor video from analog/HDCVI camera inputs and IP camera inputs simultaneously. The X51A series supports a maximum of 24 channels, with up to 16 channels of HDCVI/AHD/TVI/CVBS inputs and up to an additional 8 channels of IP inputs. The flexibility of the HDCVI DVR allows all 24 channels to record input from IP cameras, or from a combination of input from analog and IP sources (not to exceed the maximum number of analog cameras allowed per recorder).

Flexible Recording

The HDCVI DVR offers a variety of configurable recording options and schedule that saves HDD space and active monitoring time. The recorder monitors incoming video and can be programmed to record if motion is detected or if an alarm is triggered. The recorder 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.

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 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.

Intelligent Video System (IVS)

With built-in IVS analytics on up to eight (8) channels, the HDCVI DVR delivers intelligent functions to monitor a scene for Tripwire violations, intrusion detection, and abandoned or missing objects. A device with IVS quickly and accurately responds to monitoring events in a specific area.

Face Detection

The HDCVI DVR offers Face Detection of the first analog channel. This technology detects and captures a snapshot of a human face in a defined area within a scene.

Smart Fan Design

The HDCVI DVR automatically turns on or turns off the fan according to the CPU temperature. This function reduces fan noise and helps to conserve electricity.

Smart Search

Smart Search allows an operator to specify a region in the playback video to search for a motion detection event, saving time and manpower.

*Warranty applies to products sold through an authorized Dahua Dealer.



Technical Specification

System

Main Processor	Embedded Processor
Operating System	Embedded LINUX

Interface

Analog Camera Input	16 Channels, BNC
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Preview Ability ¹	Channels 1 and 2: 5 M-N at 20 fps or 4 M-N, 1080p, 720p at 30 fps Other Channels: 4 M-N, 1080p, 720p at 30 fps
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HDCVI	5 MP, 4 MP, 1080p at 30 fps, 720p at 60 fps, 720p at 30 fps
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AHD	5 MP, 4 MP, 1080p at 30 fps, 720p at 30 fps
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TVI	5 MP, 4 MP, 1080p at 30 fps, 720p at 30 fps
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CVBS	NTSC
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IP Camera Input	16 + 8
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Audio	
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Input	16 Channels (use DB25 Audio Dongle)
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Output	One (1) Channel, RCA
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Two-way Talk	Reuse Audio In/Out, RCA
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Compression	Smart H.265+, H.265, Smart H.264+, H.264
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Recording Resolution ¹	5 M-N (1296 x 1944), 4 M-N (1280 x 1440), 1080p, 1080N, 720p, 960H, D1, CIF
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Record Rate ¹	Main Stream	Channels 1 and 2: 5 M-N at 10 fps Channels 3 to 16: 4 M-N, 1080p at 15 fps 1080N, 720p, 960H, D1, CIF at 30 fps
	Sub Stream	D1 or CIF at 15 fps

Maximum Incoming Bandwidth	96 Mbps
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Bit Rate	32 Kbps to 6144 Kbps per Channel
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Record Mode	Manual, Schedule (Regular, Continuous), MD (Video Detection: Motion Detection, Video Loss, Tampering), Alarm, Stop
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Record Interval	1 to 60 minutes (default: 60 minutes), Pre-record: 1 s to 30 s, Post-record: 10 s to 300 s
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Audio Compression	AAC (first channel only), G.711A, G.711U, PCM
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Audio Sample Rate	8 KHz, 16 bits per Channel
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Audio Bit Rate	64 Kbps per Channel
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Display

Interface	One (1) HDMI (3840 x 2160) One (1) VGA (1920 x 1080)
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Native Output Resolution	1920 x 1080, 1280 x 1024, 1280 x 720
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Maximum Decoding	
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X51A3E	16 Channels of 4 M-N at 15 fps 16 Channels of 1080p at 15 fps 4 Channels of 4 M-N at 30 fps
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Multi-screen Display	
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IP extension mode disabled	1/4/8/9/16
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IP extension mode enabled	1/4/8/9/16/25
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On-screen Display	Camera Title, Time, Video Loss, Camera Lock, Motion Detection, Recording
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Interface	One (1) RJ45 (1000 Mbps) Port
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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)
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Maximum User Access	128 Users
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Mobile Operating System	IOS, Android
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Interoperability	ONVIF 16.12, CGI Conformant
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Alarms	
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Trigger Events	Recording, PTZ, Tour, Video Push, Email, FTP, Snapshot, Buzzer and Screen Tips
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Video Detection	Motion Detection, MD Zones: 396 (22 x 18), Video Loss, Tampering and Diagnosis
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Alarms	
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Input	16 Channels
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Output	Three (3) Channels
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Playback	1/4/9/16
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Search Mode	Time/Date, Alarm, MD and Exact Search (accurate to 1 second)
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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
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Backup Mode	USB Device/Network
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1. The M-N resolution refers to technology that allows a 1080p HDCVI DVR to accept a video signal from a 5 MP or a 4 MP camera by sampling every other pixel on a horizontal line from the camera. The resulting recording resolutions are: 5 M-N: 1296 x 1944; 4 M-N: 1280 x 1440.

Storage

Internal HDD	One (1) SATA Ports, up to 10 TB capacity for each disk
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Auxiliary Interface

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

Electrical

Power Supply	12 VDC, 2 A
Power Consumption	< 15 W, without HDD

Construction

Dimensions	1U, 325.0 mm x 255.0 mm x 55.0 mm (12.80 in. x 10.04 in. x 2.17 in.)
Net Weight, without HDD	1.3 kg (2.90 lb)
Gross Weight	2.20 kg (4.90 lb)
Installation	Desktop

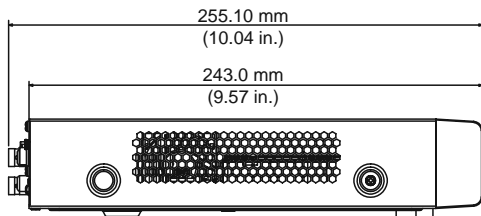
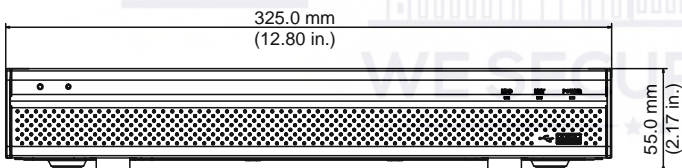
Environmental

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

Certifications

Safety	UL 60950-1
Electromagnetic Compatibility (EMC)	FCC Part 15 Subpart B ICES 003 Issue 6
	EN 55032
	EN 50130
	EN 61000-3-2 EN 61000-3-3
Immunity	EN 55024 : 2010

Dimensions (mm/in.)



Intelligence

The IVS features are operational only when the additional IP channel feature is not active. The HDCVI DVR supports only IVS or the additional IP channel inputs, both features cannot be in use simultaneously. IVS triggers an alarm and takes a defined action for the following events:

Premium Features

Channels 1 and 2: Support all Premium IVS Features
Channels 3 through 8: Support Tripwire and Intrusion Premium IVS Features

Tripwire	A target crosses a user-defined line.
Intrusion	A target enters or exits a defined perimeter.
Abandoned/Missing Object	A target leaves an object in designated area, or a target removes an object from the same designated area.

Advanced Feature

Available on Analog Channel 1 (feature not available if an IP camera is connected as Camera 1)

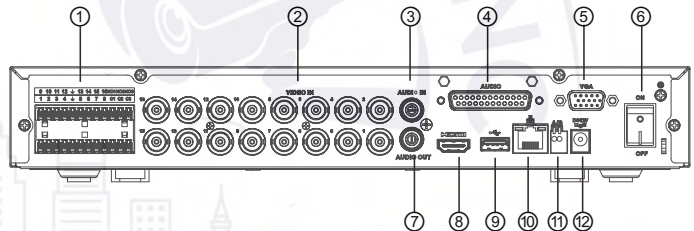
Face Detection	Detects and captures a snapshot of a human face in a defined area within a scene.
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Ordering Information

Type	Part Number	Description
16-channel HDCVI DVR	X51A3E1	16 Analog/CVI Inputs, 16 + 8 IP Inputs, 1 TB HDD, 16 Alarm Inputs, 3 Alarm Outputs
	X51A3E2	16 Analog/CVI Inputs, 16 + 8 IP Inputs, 2 TB HDD, 16 Alarm Inputs, 3 Alarm Outputs

Rear Panel

X51A3E



1	Alarm I/O	7	Audio OUT, RCA x 1
2	Video IN, BNC x 16	8	HDMI Port
3	Audio IN, channel 1, RCA x 4	9	USB Port
4	Audio IN, channels 2 to 16 (use DB25 Audio Dongle)	10	Network Port
5	VGA OUT	11	RS485 Port
6	Power Switch	12	12 VDC Power IN

