# Penta-brid 1080p Mini DVR
## 4/8/16-Channel Penta-brid 1080p Mini 1U Digital Video Recorder

- Embedded Processor
- Dual-stream Recording
- Smart H.264+ and H.264 Video Compression
- Offers 720p (real-time) and 1080p (15 fps) Resolutions
- 4, 8, or 16 HDCVI/AHD/TVI/CVBS Channels
- 4 + 2, 8 + 4, or 16 + 8 IP Channels, up to 5 MP per Channel
- Maximum 24/48/96 Mbps Incoming Bandwidth
- Built-in Smart Search
- Intelligent Video System (one IP channel)

| Lite Series | Smart H.264+ | Plug&Play | 4/8/16CH | P2P | 1080p HDMI / VGA |

## System Overview

Dahua, a global leader in security systems, introduces XVR technology - the perfect affordable solution to upgrade existing video surveillance systems while leveraging existing networks, cabling, and cameras. XVR technology utilizes Penta-brid access technology to seamlessly record video from HDCVI, AHD, TVI, CVBS, and IP sources simultaneously.

The XVR offers advanced options such as built-in motion detection algorithms, alarm triggers, and customized recording modes. XVR technology is the ideal solution for actively monitoring and recording video feeds in 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/CVI camera inputs and IP camera inputs simultaneously. The X21A 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 XVR 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 XVR). In addition, the XVR supports a maximum of 16 local live-view channels and 16 playback channels.

### Flexible Recording
The XVR offers a variety of configurable recording options and schedules that saves HDD space and active monitoring time. The XVR monitors incoming video and can be programmed to record if motion is detected or if an alarm is triggered. The XVR 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

### Spot Output (X21A3E only)
The XVR features Spot Output, allowing an operator to view a secondary monitor assigned to select cameras or video inputs in a high-security area.

### Smart H.264+
The Smart H.264+ video compression standard can reduce bit rate and storage requirements by up to 70% without having to invest in new cameras.

### HDCVI/AHD/TVI/CVBS Auto-detect
The XVR automatically recognizes the incoming signals of each attached analog camera without any setup, making installation easy and operation convenient.

### 5 MP Resolution
The XVR supports 5 MP resolution (2560 x 1920) on IP camera inputs for recording and live viewing.

### Intelligent Video System (IVS)
IVS is a built-in video analytic algorithm that 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. The camera also offers tamper detection by recognizing a dramatic scene change and generating a warning message to inspect the camera.

### 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.

Onvif

# Lite Series | X21A1E/X21A2E/X21A3E

## Technical Specification

### System

| | |
|---|---|
| Main Processor | Embedded Processor |
| Operating System | Embedded LINUX |

### Display

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|---|---|
| Interface | One (1) HDMI and One (1) VGA |
| Spot Output (Video Matrix) (X21A3E only) | HDMI or VGA Interface, configurable |
| Resolution | 1920 × 1080, 1280 × 1024, 1280 × 720, 1024 × 768 |

| Multi-screen Display | X21A1E | X21A2E | X21A3E |
|---|---|---|---|
| | 1/4/6 | 1/4/8/9/16 | 1/4/8/9/16/25 |

| | |
|---|---|
| On-screen Display Options | Camera Title, Time, Video Loss, Camera Lock, Motion Detection, and Recording |

### Video Detection and Alarm

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

| Alarm Input | X21A1E | X21A2E | X21A3E |
|---|---|---|---|
| | 8 | 8 | 16 |

| | |
|---|---|
| Relay Output | Three (3) |

### Playback and Backup

| Playback | X21A1E | X21A2E | X21A3E |
|---|---|---|---|
| | 1/4 | 1/4/9 | 1/4/9/16 |

| | |
|---|---|
| Search Mode | Time / Date, Alarm, Motion Detection, 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<br>Network |

### Storage

| | |
|---|---|
| Internal HDD | One (1) SATA Port, up to 8 TB capacity |
| HDD Mode | Single |

### Auxiliary Interface

| USB | X21A1E | X21A2E | X21A3E |
|---|---|---|---|
| | Two (2) USB 2.0 Ports | One (1) USB 2.0 Port One (1) USB 3.0 Port | |

| | |
|---|---|
| RS485 | One (1) Port, for PTZ Control |

### 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 |

### Audio and Video

| Camera Inputs | Model | Analog Inputs | IP Inputs |
|---|---|---|---|
| | X21A1E | 4 | 4 + 2 |
| | X21A2E | 8 | 8 + 4 |
| | X21A3E | 16 | 16 + 8 |

| Resolution | | 1080p at 15 fps per channel | Up to 5 MP per channel |
|---|---|---|---|

| Audio Connections | Model | Audio IN | Audio OUT |
|---|---|---|---|
| | X21A1E | 4, RCA | 1, RCA |
| | X21A2E | 8, RCA | 1, RCA |
| | X21A3E | 16<br>1 RCA + 15-channel DB25 Audio Dongle | 1, RCA |

| | |
|---|---|
| Two-way Talk | Reuse Audio In (channel 1 )/ out, RCA |

### Recording

| | |
|---|---|
| Compression | Smart H.264+ / H.264 |
| Resolution | 1080p, 720p, 960H, D1, HD1, BCIF, CIF, QCIF |

| Record Rate | |
|---|---|
| Main Stream | 1080p at 1 to 15 fps or 1080N, 720p, 960H, D1, HD1, BCIF, CIF, QCIF at 1 to 30 fps |
| Sub Stream | D1, CIF, QCIF at 1 to 30 fps |

| | |
|---|---|
| Bit Rate | 1 Kbps to 6144 Kbps per channel |
| Record Mode | Manual, Schedule (Regular, Continuous), Motion Detection (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 |

### Network

| Interface | X21A1E / X21A2E | X21A3E |
|---|---|---|
| | One (1) RJ-45 Port (100 M) | One (1) RJ-45 Port (1000 M) |

| | |
|---|---|
| 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) |
| Max. User Access | 128 users |
| Mobile Operating System | IOS and Android |
| Interoperability | ONVIF 2.4.1, CGI Conformant |

### Electrical

| | |
|---|---|
| Power Supply | 12 VDC, 2 A |
| Power Consumption | < 10 W, without HDD |

### Environmental

| | |
|---|---|
| Operating Conditions | -10° C to +55° C (+14 °F to +131 °F), 86 to 106 kpa |
| Storage Conditions | 0° C to +50° C (+32 °F to +122 °F), 0 to 90% RH |

### Construction

| Dimensions | |
|---|---|
| DVR | Mini 1U, 325.0 mm × 255.10 mm × 55.0 mm (12.80 in. x 10.0 in. x 2.20 in.) |
| DVR with PFH101 Rack Mount Tray | 482.60 mm x 281.20 mm x 55.0 mm (19.0 in. x 11.10 in. x 2.20 in) |

| | |
|---|---|
| Net Weight | 1.50 kg (3.30 lbs), without HDD |
| Gross Weight | 2.0 kg (4.40 lbs) |
| Installation | Desktop installation |

## Certifications

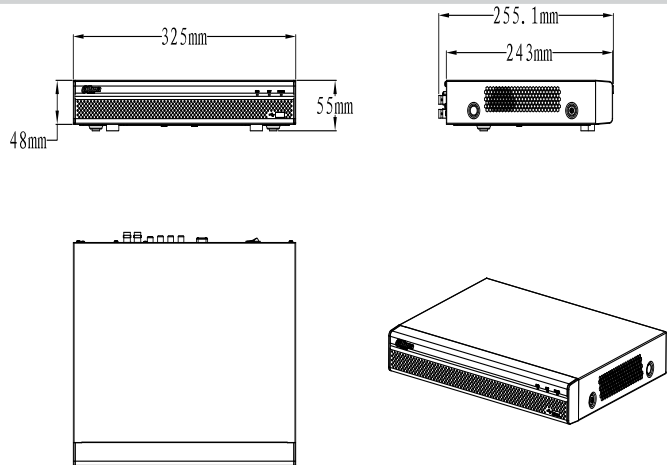| | |
|---|---|
| Safety | UL 60950-1<br>CAN/CSA C22.2 No. 60950-1-07 |
| Electromagnetic Compatibility (EMC) | FCC Part 15 Subpart B ICES 003 Issue 6<br>EN 55032: 2012+AC:2013 (Class B)<br>EN 50130-4: 2011<br>EN 61000-3-2 : 2014<br>EN 61000-3-3 : 2013 |
| Immunity | EN 55024 : 2010 |

## Intelligence

IVS triggers an alarm and takes a defined action for the following events:

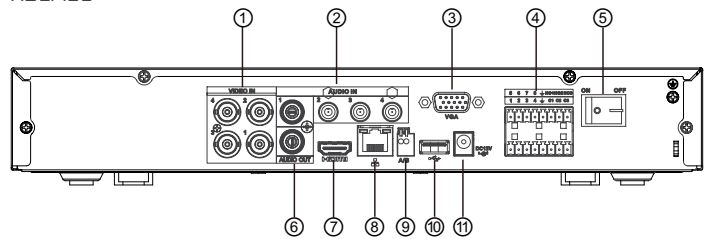| | |
|---|---|
| Standard Features | • Tampering with the camera.<br>• Error writing to an onboard Micro SD card.<br>• Error sending or receiving data over the network.<br>• Unauthorized access to the camera. |
| Premium Features | |
| Motion | An object moves through any part of the scene. |
| Tripwire | A target crosses a user-defined line. |
| Intrusion | A target enters or exits a defined perimeter. |
| Scene Change | A person or object moves the camera to change the scene or covers the camera to obscure the scene. |
| Abandoned/Missing Object | A target leaves an object in designated area, or a target removes an object from the same designated area. |

## Ordering Information

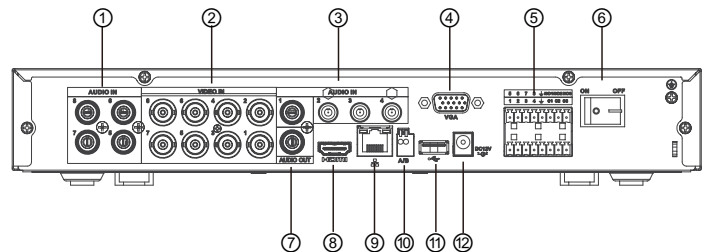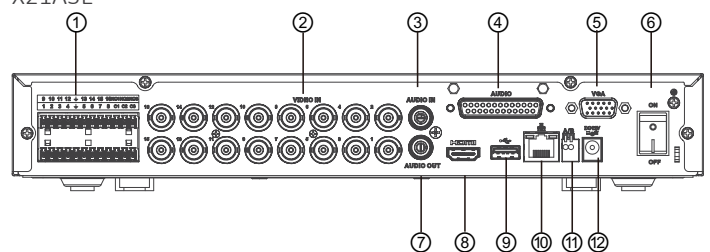| Description | Part Number | Description |
|---|---|---|
| 4-channel HDCVI DVR | X21A1E | 4 Analog/CVI Inputs, 4 + 2 IP Inputs, 0 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A1E1 | 4 Analog/CVI Inputs, 4 + 2 IP Inputs, 1 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A1E2 | 4 Analog/CVI Inputs, 4 + 2 IP Inputs, 2 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A1E3 | 4 Analog/CVI Inputs, 4 + 2 IP Inputs, 3 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A1E4 | 4 Analog/CVI Inputs, 4 + 2 IP Inputs, 4 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A1E6 | 4 Analog/CVI Inputs, 4 + 2 IP Inputs, 6 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| 8-channel HDCVI DVR | X21A2E | 8 Analog/CVI Inputs, 8 + 4 IP Inputs, 0 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A2E1 | 8 Analog/CVI Inputs, 8 + 4 IP Inputs, 1 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A2E2 | 8 Analog/CVI Inputs, 8 + 4 IP Inputs, 2 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A2E3 | 8 Analog/CVI Inputs, 8 + 4 IP Inputs, 3 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A2E4 | 8 Analog/CVI Inputs, 8 + 4 IP Inputs, 4 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| | X21A2E6 | 8 Analog/CVI Inputs, 8 + 4 IP Inputs, 6 TB<br>8 Alarm Inputs, 3 Alarm Outputs |
| 16-channel HDCVI DVR | X21A3E | 16 Analog/CVI Inputs, 16 + 8 IP Inputs, 0 TB<br>16 Alarm Inputs, 3 Alarm Outputs, Spot Output |
| | X21A3E1 | 16 Analog/CVI Inputs, 16 + 8 IP Inputs, 1 TB<br>16 Alarm Inputs, 3 Alarm Outputs, Spot Output |
| | X21A3E2 | 16 Analog/CVI Inputs, 16 + 8 IP Inputs, 2 TB<br>16 Alarm Inputs, 3 Alarm Outputs, Spot Output |
| | X21A3E3 | 16 Analog/CVI Inputs, 16 + 8 IP Inputs, 3 TB<br>16 Alarm Inputs, 3 Alarm Outputs, Spot Output |
| | X21A3E4 | 16 Analog/CVI Inputs, 16 + 8 IP Inputs, 4 TB<br>16 Alarm Inputs, 3 Alarm Outputs, Spot Output |
| | X21A3E6 | 16 Analog/CVI Inputs, 16 + 8 IP Inputs, 6 TB<br>16 Alarm Inputs, 3 Alarm Outputs, Spot Output |
| Accessory, optional | PFH101 | Rack Mount Tray<br>482.60 mm x 281.20 mm x 43.7 mm<br>(19.0 in. x 11.07 in. x 1.72 in.) |

## Dimensions (mm)



## Rear Panels

### X21A1E



| | | | |
|---|---|---|---|
| 1 | Video IN x 4, BNC | 7 | HDMI Output |
| 2 | Audio IN x 4, RCA | 8 | Ethernet Port (100 Mbps) |
| 3 | VGA Output | 9 | RS485 Port |
| 4 | Alarm Input/Output | 10 | USB Port |
| 5 | Power Switch | 11 | Power Input |
| 6 | Audio Out x 1, RCA | | |

### X21A2E



| | | | |
|---|---|---|---|
| 1 | Audio IN x 4, Channels 5-8, RCA | 7 | Audio OUT x 1, RCA |
| 2 | Video IN x 8, BNC | 8 | HDMI Output |
| 3 | Audio IN x 4, Channels 1-4, RCA | 9 | Ethernet Port (100 Mbps) |
| 4 | VGA Output | 10 | RS485 Port |
| 5 | Alarm Input/Output | 11 | USB Port |
| 6 | Power Switch | 12 | Power Input |

### X21A3E



| | | | |
|---|---|---|---|
| 1 | Alarm Input/Output | 7 | Audio OUT x 1, RCA |
| 2 | Video IN x 16, BNC | 8 | HDMI Output |
| 3 | Audio IN x 1, Channel 1, RCA | 9 | USB Port |
| 4 | Audio IN, Channels 2-16 (use DB25 Audio Dongle) | 10 | Ethernet Port (1000 Mbps) |
| 5 | VGA Output | 11 | RS485 Port |
| 6 | Power Switch | 12 | Power Input |

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