HDCVI Intro

New HD-Over-Coax Solution Provides Long-Distance Transmission

As the industry moves from standard definition to high definition, how can we ensure the whole surveillance system not only satisfies the resolution requirement, but also the total cost? Dahua Technology presents High Definition Composite Video Interface (HDCVI) technology to the market. HDCVI, Dahua's in-house technology, is an over-coaxial-cable analog HD video transmission standard, allowing long-distance HD transmission at a lower cost to meet the requirements for a complex and large installation.

Submitted by Dahua Technology

Analog systems, based on coaxial cabling, still dominate today's video surveillance market — there are approximately 400 million analog cameras in use throughout the world. The demand for high definition from end-users is undoubtedly increasing; however, the need to change the cabling for a HD system can result in higher operational costs. With no new cabling or IP hassle required, HDCVI is one option for upgrading existing systems from standard definition to high definition, offering longer transmission via coaxial cable and lower total cost.

What is HDCVI?

HDCVI is a solution for megapixel high definition applications, featuring non-latent long-distance transmission at a lower cost. The name has to do with its baseband and quadrature amplitude modulation technology, which is able to avoid CVBS cross talk, completely separate brightness and hue signal, and further enhances video quality.

The HDCVI solution incorporates both cameras and DVRs. The system is star topology structured — the DVR serves as a node for an over coax P2P (Point-to-Point) transmission to the camera. The technology offers two specifications: 1080p (1920×1080) and 720p (1280×720). In addition, the technology features the Auto Signal Compensation (ASC) patent, which only allows an extremely low signal distortion along long-distance transmissions.

Long-distance Transmission

Transmitting data over 500m over a coaxial cable can be realized, depending on the cable selected. Cable 75-3 and 75-5 are recommended for transmissions within 500m, cable 75-5 and above for over 500m. Connectors and welding process also affect the transmission distance.

3 Signals in 1 Coaxial Cable

HDCVI composites video, audio, and control signals together and then transmits them over one coaxial cable, simplifying installation.

To further realize multiple-signal transmission over one cable, both audio and dual-way data communication signals are embedded in a blanking zone. This enhances synchronization with the video signal and supports a max sampling rate of 44.1kHz thanks to ASC.

The forward and reverse data channels are composited in the frame blanking zone, realizing a two-way end-to-end transmission to support control commands such as camera focus, PTZ control, real-time alarm, etc. The forward outputting data supports a high transmission baud rate, as the sending time and electric signal baud rate are predictable, and the receiving end is of high ASC performance.

On the contrary, the reverse outputting data supports a lower baud rate due to its low signal frequency and limited data, which are affected by impedance matching and channel transmission uncertainty. However, by adopting ASC, the reverse channel can restore some degree of electrical signal during long-distance transmission.

HDCVI Introduction Continued

HDCVI Chipset

The Dahua HDCVI chipset is comprised of a transmitting chip (TX) and receiving chip (RX), which are designed for front-end HDCVI cameras and DVRs, respectively. These chips can also be applied to fiber optics transceivers, distributors, and matrices as well.

TX chip interfaces are a BT1120/BT656 digital video interface, I2S audio interface, and I2C configuration interface, which are all of industrial standard design. This allows the TX chip to be used in any standard interface for ISPs and audio chips on the market.

As for analog output, in addition to the HDCVI format, the TX chip is also compatible with CVBS. The TX chip supports 720p@25fps/30fps/50fps/60fps and 1080p@25fps/30fps.

Figure 1: TX Flow Chart
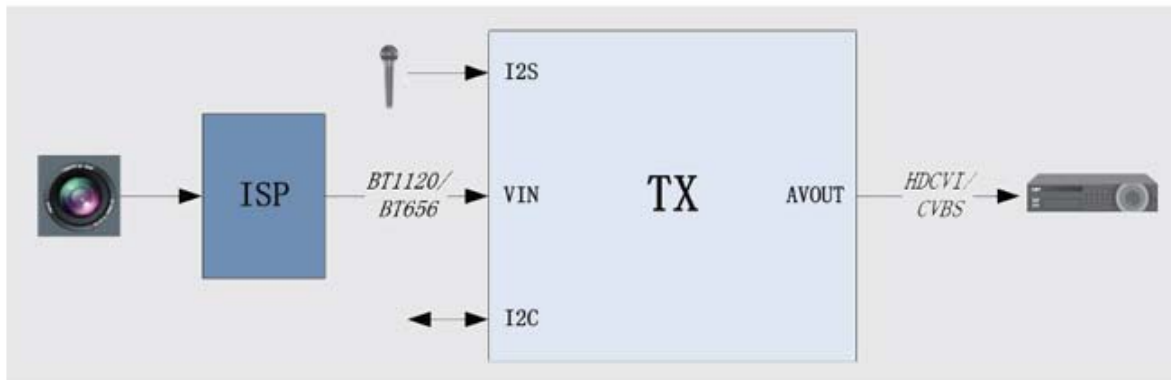
The figure above shows the simplicity of the HDCVI solution with the adopted TX chip. The tiny size of the chip also makes it suitable for application in all kinds of camera sizes.

The RX chip supports HDCVI HD inputs and digital video outputs — I2S audio output, multiple-chip audio cascade output, as well as I2C configuration interface. It also supports flexible mapping of HDCVI video input channel and digital output channel. Each of these channels has its own format and built-in equalizer that support setup for video parameters such as brightness, contrast, hue, saturation, and dual-way control signal transmission.

Figure 2: RX Flow Chart
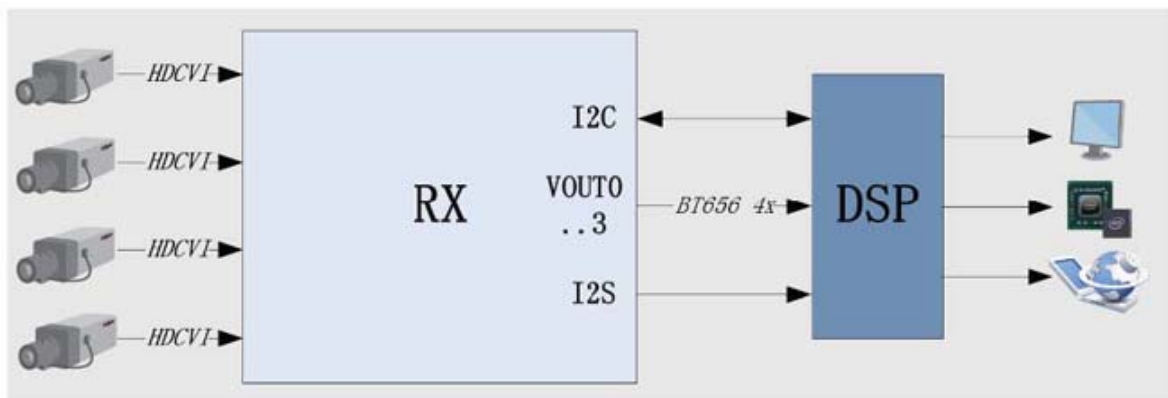
As seen in Figure 2, a RX chip has the same interface as an AD chip in a conventional analog DVR, which is to say that it provides seamless integration with conventional DVRs. The built-in equalizer allows HDCVI DVRs to receive HD video signals from up to 500m. The TX chip supports 1080p@25fps/30fps/50fps/60fps and 720p@25fps/30fps.

HDCVI Provides Long-distance HD transmission

The HDCVI solution can not only render smooth HD transmission during long-distance transmissions, but is also free from IP hassles and allows for simple installation; it also features a no-latency capability for real-time performance. With no need for compression processing to maintain its original video quality, it is able to present good quality vivid images. In comparison with other analog systems, HDCVI has an advantage on the transmission distance front, as it can transmit 500m by using 75-3 cable for general transmission media and features a low signal distortion rate.

In a word, HDCVI not only provides a good solution that offers megapixel image quality over long-distance transmission, but also ease of installation.

Securview Victory Series™: The latest in HD over coax

PTZ Alarm

HD Video

RG59 75-3 Coaxial Cable

Audio

IP

HDCVI

ANALOGUE

Full HD 1080

Versatile HD CCTV solution

The Securview Victory Series utilises the HDCVI transmission standard, made by the industry for the industry. It is designed for bringing HD video to existing coaxial analogue systems.

- HDCVI transmission: HD video, PTZ, alarm and audio sent across a single coaxial cable.
- Long transmission distances of 300m in 1080p and up to 500m in 720p systems.
- Low latency and anti-interference properties
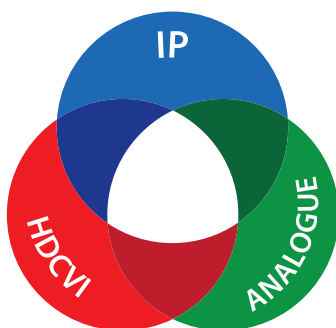
Ideal for any upgrade installs

Each DVR in the Securview Victory Series can accommodate a combination of HDCVI, analogue and/or IP video inputs. This makes it ideal for upgrade installations.

- Perfect for multi-staged CCTV upgrades as cost effective alternative solution to a complete surveillance upgrade.
- The flexibility of camera selection from VIP Vision, Watchguard & Securview ranges.

1080p HD across the range

The latest updates to the Securview Victory Series have made full HD 1080p (1920 x 1080) standard across the entire DVR series, now with more cameras than ever before to choose from.

- Deliver amazing upgrade results.
- Achieve nearly 5 times higher resolution than typical D1 analogue (720 x 576).
- 1080p Victory Series DVRs are backwards compatible with 720p HDCVI cameras.

16 Channel 1080p HD Over Coax DVR

Model: TVR16

- Max. 1080p / 2.0 megapixel resolution support (1920 x 1080)
- Records 1080p/25fps and 720p/25fps
- 2 x HDMI, 1 x VGA and 1 x BNC video output
- 8 x SATA up to 32TB capacity / 1 x eSATA / 4 x USB
- 2 x RJ45 (1000M) Ethernet port / 1 x RS485 / 1 x RS422 / 1 x RS232
- 16 channel alarm input / 6 channel relay output
- 16 channel BNC audio inputs / 1 channel audio BNC output
- Max. 16 simultaneous camera display split
- ONVIF 2.4 conformance

Supports HDCVI, analogue and IP video input
Up to 16 channels of HDCVI (1080p/25fps) / analogue (D1/25fps)
Up to 32 channels of IP (substitutes HDCVI/analogue) up to 1080p/25fps

Victory Series™ DVRs :The ideal analogue upgrade

4 Channel 1080p HD Over Coax DVR

Model: CVR4V3

- Max. 1080p / 2.0 megapixel resolution support (1920 x 1080)
- Records 1080p/12fps and 720p/25fps
- HDMI and VGA video output
- 1 x SATA up to 4TB capacity / 2 x USB / 1 x RS485
- 1 x RJ45 (100M) Ethernet port
- 4 channel alarm input / 3 channel relay output
- ONVIF 2.4 conformance

Supports HDCVI, analogue and IP video input
Up to 4 channels of HDCVI (1080p/12fps) / analogue (D1/25fps)
Up to 2 channels of IP (substitutes HDCVI/analogue) up to 1080p/12fps

8 Channel 1080p HD Over Coax DVR

Model: CVR8V3

- Max. 1080p / 2.0 megapixel resolution support (1920 x 1080)
- Records 1080p/12fps and 720p/25fps
- HDMI and VGA video output
- 2 x SATA up to 8TB capacity / 2 x USB / 1 x RS485
- 1 x RJ45 (100M) Ethernet port
- 8 channel alarm input / 3 channel relay output
- ONVIF 2.4 conformance

Supports HDCVI, analogue and IP video input
Up to 8 channels of HDCVI (1080p/12fps) / analogue (D1/25fps)
Up to 2 channels of IP (substitutes HDCVI/analogue) up to 1080p/12fps

16 Channel 1080p HD Over Coax DVR

Model: CVR16V3

- Max. 1080p / 2.0 megapixel resolution support (1920 x 1080)
- Records 1080p/12fps and 720p/25fps
- HDMI and VGA video output
- 2 x SATA up to 8TB capacity / 2 x USB / 1 x RS485
- 1 x RJ45 (1000M) Ethernet port
- 16 channel alarm input / 3 channel relay output
- ONVIF 2.4 conformance

Supports HDCVI, analogue and IP video input
Up to 16 channels of HDCVI (1080p/12fps) / analogue (D1/25fps)
Up to 2 channels of IP (substitutes HDCVI/analogue) up to 1080p/12fps

32 Channel 1080p HD Over Coax DVR

Model: CVR32

- Max. 1080p / 2.0 megapixel resolution support (1920 x 1080)
- Records 1080p/12fps and 720p/25fps
- 2 x HDMI, 1 x VGA and 1 x BNC video output
- 8 x SATA up to 32TB capacity / 4 x USB / 1 x RS485 / 1 x RS232
- 2 x RJ45 (1000M) Ethernet port
- 16 channel alarm input / 6 channel relay output
- ONVIF 2.4 conformance

Supports HDCVI and IP video input only (analogue not supported)
Up to 32 channels of HDCVI (1080p/12fps)
Up to 32 channels of IP (substitutes HDCVI) up to 1080p/12fps

Securview Victory Series™ 1080p camera range

1080p Infrared Motorised HDCVI Dome
Model: VSCVI2MPVDIRM30M

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- 2.7~12mm motorised varifocal lens / auto iris
- 105.5° (wide) ~ 32.9° (tele) angle of view
- Single channel alarm input/output
- Single channel audio input
- Switchable video output BNC HDCVI HD / CVBS SD
- 30m infrared range, day/night (auto ICR)
- 2D/3D digital noise reduction
- Up to 300m transmission distance (75-3 coax)
- Dual voltage: Power via 12VDC or 24VAC
- IK10 vandal / IP66 weather resistant housing

1080p Infrared Motorised HDCVI Bullet
Model: VSCVI2MPFBIRM30M

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- 2.7~12mm motorised varifocal lens / auto iris
- 105.5° (wide) ~ 32.9° (tele) angle of view
- Single channel alarm input/output
- Single channel audio input
- Switchable video output BNC HDCVI HD / CVBS SD
- 30m infrared range, day/night (auto ICR)
- 2D/3D digital noise reduction
- Up to 300m transmission distance (75-3 coax)
- Dual voltage: Power via 12VDC or 24VAC
- IP66 weather resistant housing

1080p 20x Optical Infrared HDCVI PTZ Dome
Model: VSCVI2MPPTZIR

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- 4.7~94.0mm motorised varifocal lens
- 54.1° (wide) ~ 3.2° (tele) angle of view
- 2 channel alarm input / 1 channel output
- Single channel audio input
- Switchable video output BNC HDCVI HD / CVBS SD
- 100m infrared range, day/night (auto ICR)
- Digital WDR and 2D/3D digital noise reduction
- Power via 24VAC/3A, auto-restore status on power loss
- Full 360° pan; -15~90° tilt; and 180° auto-flip
- PTZ modes: 5 pattern, 8 tour, auto pan, auto scan
- Preset speed: 240°/s pan, 200°/s tilt
- Up to 300m transmission distance (75-3 coax)
- IP66 weather resistant housing
- 1 x RS485 input

Includes right angle wall mount bracket and 24VAC power supply

For all of your high definition over coax needs

1080p Infrared Motorised HDCVI Dome
Model: VSCVI2MPVDIRM

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- 2.7~12mm motorised varifocal lens / fixed iris
- 105° (wide) ~ 33° (tele) angle of view
- 30m infrared range, day/night (auto ICR), 2D/3D DNR
- Switchable video output BNC HDCVI HD / CVBS SD
- Over 300m transmission distance (75-3 coax)
- Power via 12VDC
- IK10 vandal / IP66 weather resistant housing

1080p Infrared Fixed HDCVI Mini Dome
Model: VSCVI2MPVDIR (3.6mm fixed lens)
　　　　　 VSCVI2MPVDIR6 (6.0mm fixed lens)

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- Fixed 3.6mm (88°) lens / 6.0mm (53.4°) optional)
- 30m infrared range, day/night (auto ICR), 2D/3D DNR
- Switchable video output BNC HDCVI HD / CVBS SD
- Up to 300m transmission distance (75-3 coax)
- Power via 12VDC
- IK10 vandal / IP67 weather resistant housing

1080p Infrared Motorised HDCVI Bullet
Model: VSCVI2MPFBIRM

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- 2.7~12mm motorised varifocal lens / fixed iris
- 105° (wide) ~ 33° (tele) angle of view
- 30m infrared range, day/night (auto ICR), 2D/3D DNR
- Switchable video output BNC HDCVI HD / CVBS SD
- Over 300m transmission distance (75-3 coax)
- Power via 12VDC
- IP66 weather resistant housing

1080p Infrared Fixed HDCVI Mini Bullet
Model: VSCVI2MPFBIRV3

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Streams 1080p/25fps, 720p/25fps
- Fixed 3.6mm (88°) lens
- 20m infrared range, day/night (auto ICR), 2D/3D DNR
- Switchable video output BNC HDCVI HD / CVBS SD
- Up to 300m transmission distance (75-3 coax)
- Power via 12VDC
- IP66 weather resistant housing

NEW

Victory Series™ kits: Analogue upgrades made easy

Five times the image resolution

Deliver a truly stunning experience by upgrading your customers' analogue footage to full HD using the Securview Victory Series analogue upgrade surveillance kits:

- Increase image resolution five fold (from D1)
- Available in 4, 8 and 16 channels for upgrade jobs of varying sizes.
- All purpose cameras featuring infrared, IP66 weather and IK10 vandal resistance

Designed for analogue upgrades

Take advantage of the thousands of analogue upgrade jobs available by implementing Victory Series surveillance kits into your product offering. Consider these unique advantages:

- Each camera features a switchable HDCVI / CVBS video output, allowing Victory Series cameras to be used with analogue DVRs
- With up to 300m transmission distance at 1080p, upgrade *and* expand existing installs

Remote view config in seconds

Each DVR bundled with Securview Victory Series surveillance kits features everything you need to deliver professional remote view capabilities to your client, including:

- Simply connect the DVR to the internet, change the default password, scan the QR code and your client's set up
- QR code compatible with Apple® iOS™ and Google® Android™ smartphones/tablets.

Installing Victory Series™ kits at a new site?

Victory Series Kit Power Supply Accessory Pack
Model: CVR4PACKACC

- Accessory pack built Securview Victory Series new installs
- 1 x 12VDC/5A switch mode power supply with lead
- 1 x 5 port DC plug loom
- 4 x DC power connector packs (male & female)
  * Coaxial cable not included, order separately
  One accessory pack powers up to 4 cameras

Fast to upgrade with impressive image quality

4 Channel 1080p Analogue Upgrade Kit

Model: CVR4PACK3

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Records 1080p/12fps across all channels
- HDMI and VGA video output
- Pre-installed 1TB surveillance hard drive
- DVR supports HDCVI, analogue and IP video inputs

Included cameras

- 4 x 2.0MP fixed, IP66, infrared mini bullets (VSCVI2MPFBIRV3)

Included accessories

- 1 x 1m HDMI cable, 1 x 1.5m CAT5 patch lead
- 4 x High visibility CCTV warning stickers
  * Power/coaxial cables & connectors not included

8 Channel 1080p Analogue Upgrade Kit

Model: CVR8PACK3

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Records 1080p/12fps across all channels
- HDMI and VGA video output
- Pre-installed 2TB surveillance hard drive
- DVR supports HDCVI, analogue and IP video inputs

Included cameras

- 4 x 2.0MP fixed, IP66, infrared mini bullets (VSCVI2MPFBIRV3)
- 4 x 2.0MP fixed, IK10/IP66, infrared mini domes (VSCVI2MPVDIR)

Included accessories

- 1 x 1m HDMI cable, 1 x 1.5m CAT5 patch lead
- 4 x High visibility CCTV warning stickers
  * Power/coaxial cables & connectors not included

16 Channel 1080p Analogue Upgrade Kit

Model: CVR16PACK3

- 1080p / 2.0MP maximum resolution (1920 x 1080)
- Records 1080p/12fps across all channels
- HDMI and VGA video output
- Pre-installed 2TB surveillance hard drive
- DVR supports HDCVI, analogue and IP video inputs

Included cameras

- 8 x 2.0MP fixed, IP66, infrared mini bullets (VSCVI2MPFBIRV3)
- 8 x 2.0MP fixed, IK10/IP66, infrared mini domes (VSCVI2MPVDIR)

Included accessories

- 1 x 1m HDMI cable, 1 x 1.5m CAT5 patch lead
- 4 x High visibility CCTV warning stickers
  * Power/coaxial cables & connectors not included