

# AHD, the Gateway to FHD

## A New Era for the Analog HD Market

■ SUBMITTED BY NEXTCHIP



**W**e are in a new era of the video surveillance market, especially in regard to full HD (FHD)/HD transmission technology, an explosion in the variety of FHD/HD transmission technologies. In transmitting high resolution images, FHD/HD data, there are two options in the market: raw data transmission and IP transmission based on compression.

Generally, raw data transmission is more familiar to the Asian market than the European/American market, where focus is on IP-based systems. To survive within the same video surveillance market, new technology must overcome its weaknesses and outdo its competitors.

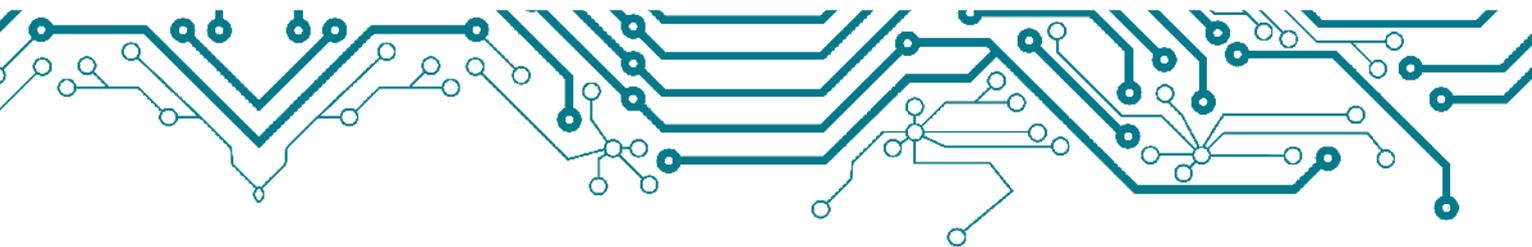
At present, raw transmission technologies for analog transmissions are gaining popularity in the market. Raw transmission technologies have a strong signal characteristic based on analog transmission and are easier to access on the manufacturers' side. Since manufacturers are accustomed to developing analog products over IP-based ones, this technology has become the most popular technology on the market now.

Covering all resolutions from standard definition (SD) to FHD, as well as providing longer distance than HD-SDI but the same high quality images and transmission without latency, Analog HD (AHD), a unique transmission solution powered by Nextchip, is taking the spotlight. The core technology from Nextchip, a dedicated video processing expert, is the major reason for the technology's success.

Due to the dilemma the video surveillance market has been in due to the cost and transmission distance of FHD/HD systems, the introduction of AHD technology provides a better solution not just to customers, but the overall market too.

### AHD FROM ANALOG TO FULL HD

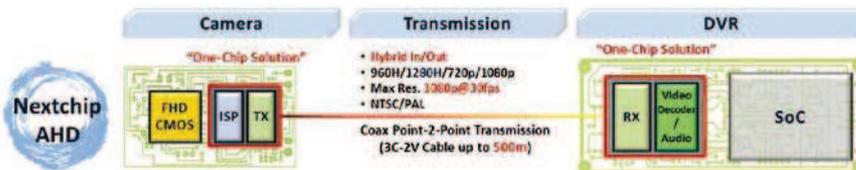
Nextchip is a fabless company specialized in the design of semiconductors. Nextchip has been developing its own core technologies like IPs and algorithms in image processing and



optimizing them into a single chip. These technologies have been adapted in both video surveillance cameras and DVRs for 17 years. Nextchip has been focusing on the surveillance market for almost two decade. With knowledge of customers' needs and possessing all the core technologies, Nextchip is set to impact the surveillance market as one of the top players in ISP and video decoders.

Based on these technologies and

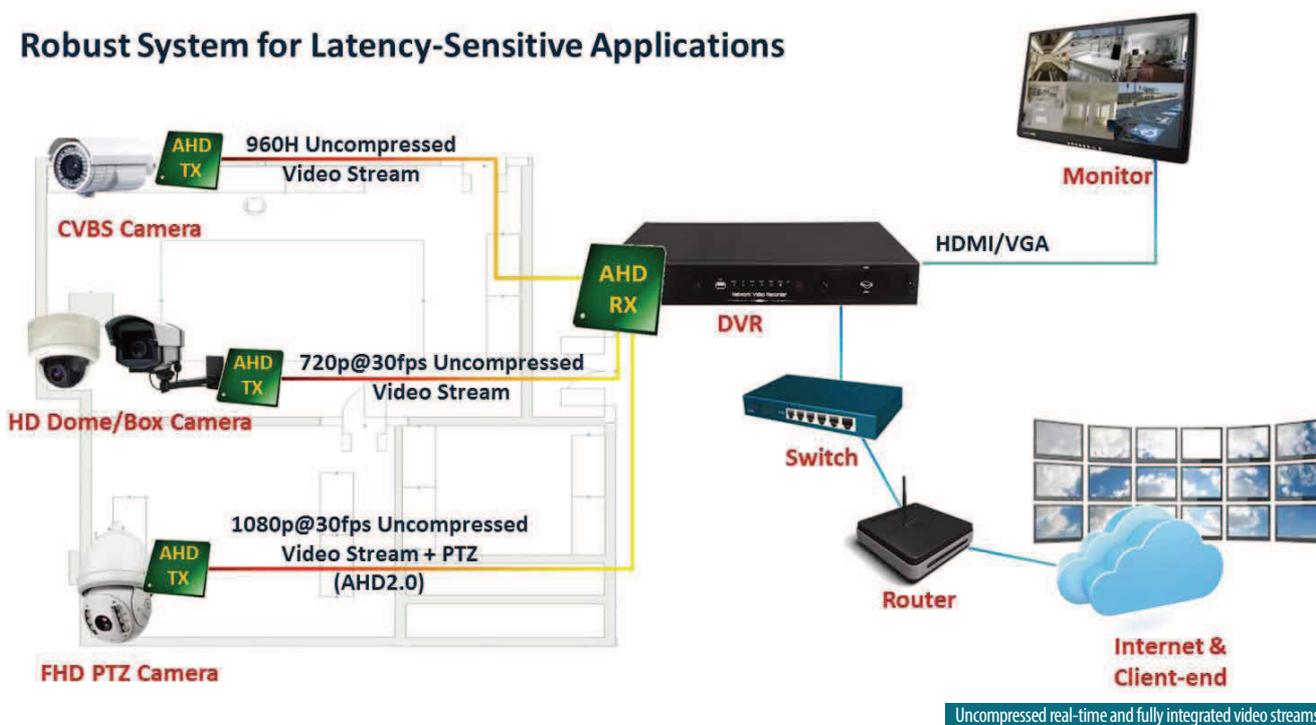
### Highly Flexible & Integrated System



know-how, in 2013, as the first phase of the transmission solution, Nextchip launched a new SD transmission technology, COMET (COMposite Video Enhanced Technology), an improvement

to the conventional CVBS in terms of cross color/cross luminance and H/V resolution that is shown in high frequency parts. Therefore, COMET provides marked clearer and sharper

### Robust System for Latency-Sensitive Applications



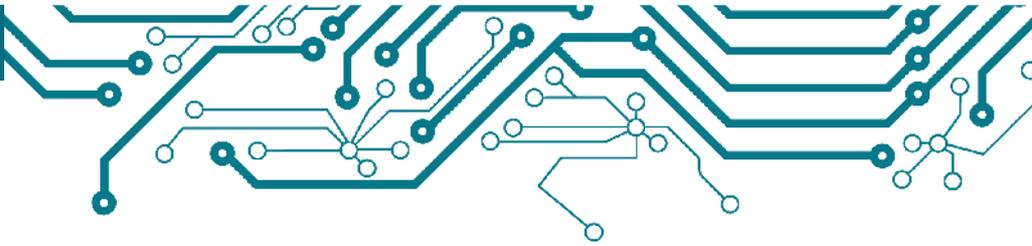
## TECHNOLOGIES IN AHD

HD products are designed with the advanced signal filtering technology that proactively prevents signal attenuation caused by longer distance. Through the technologies, moving the color sub-carrier frequency to stable bandwidth from high part, called Pseudo Y/C Color Separation technology, AHD secures the high resolution transmission and signal stability on a longer scale and minimizes signal interference.

With its proven technology in image processing, Nextchip provides manufacturers with the holistic advantages on camera, DVR, and transmission sides. This benefits manufacturers in terms of product diversification, development efficiency, and shorter lead time.

Thanks to the HD byte-interleaving method, AHD provides a huge advantage in channel expansion on a given hardware platform. Thus it enables cost-effective high resolution DVR solutions for middle and low-end segments, which could be quickly introduced to the security market.

Lastly, what gives AHD its edge is its compatibility. AHD provides compatibility between SD DVRs and FHD DVRs so it boosts product migration from SD to FHD, covering all line-ups with one platform, AHD. Furthermore, it enables hybrid input/output including 960H CVBS, enhanced CVBS (COMET) and 1080p FHD resolution. Thus it enables manufacturers' flexibility in hardware side and fast market penetration into the FHD domain.



images with higher resolution and color reproduction compared to others using the same level image sensor.

This year, as part of phase two, Nextchip has boosted the transmission solution by launching AHD1.0, reflecting feedback from manufacturers, as well as market trends. AHD1.0 is now considered to be one of the best replacement solutions against SD (960H) systems.

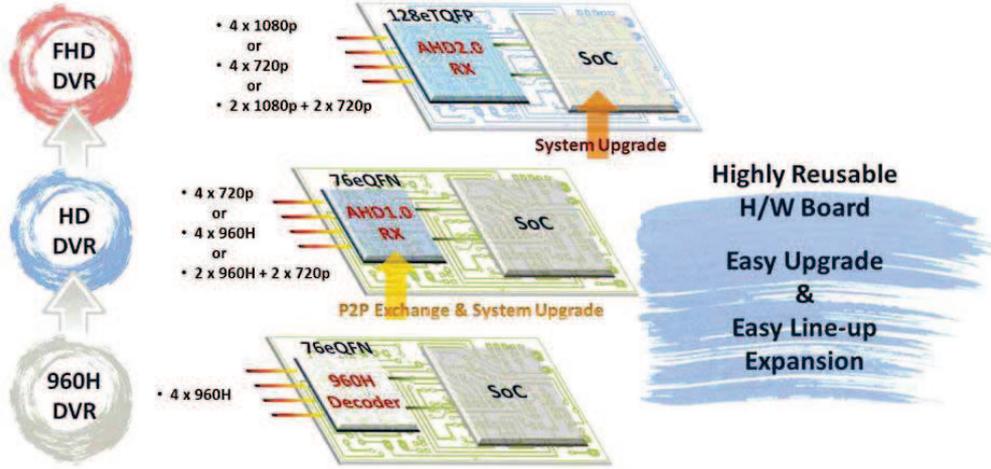
This October, Nextchip will introduce AHD2.0 (1080p) at the upcoming 2014 Security China in Beijing, the last phase of the transmission solution. AHD2.0 covers all resolutions from SD (960H/1280H) to HD and FHD; therefore, making it easier to develop hybrid DVRs by merging the existing system and expanding to the new system. Furthermore, it provides another benefit to manufacturers. To upgrade from SD-level DVRs to FHD/HD-level DVRs, usually manufacturers need to change SoCs and redesign the entire system. However by using non-real-time (NRT) transmission, AHD2.0 makes it possible for manufacturers to use the same SoC that was used in the SD-level DVR to upgrade to FHD/HD DVR (NRT).

All this shows how Nextchip has caught the market's needs. Moreover, the critical success factor of being a fast mover is based on the company's own core technologies.

**PROVIDING COST-EFFECTIVE FHD SOLUTION**

The advantages of AHD over HD/FHD solutions have caused the technology to grow drastically. New technology always comes from overcoming the existing technology, which has its own demerits. In the video surveillance market, the demerits of existing technology can be the short coverage

**High Reusability & Easy Upgrade**



and the high cost of the system. Out of these shortcomings, the concept of AHD was derived.

AHD has the same characteristics in respect to transmitting FHD/HD signal, but without compression and delay via coaxial cable like other coaxial-based transmission technologies. However, this basic concept is not good enough to satisfy all customers' requirements and expectations. Thus, Nextchip combines quality-proven ISP with TX and video decoder with RX. These solutions are not only price competitive but also provide for easy development so that systems can be constructed more efficiently.

**MAXIMIZING COMPATIBILITY**

As stated above, Nextchip has diverse ISPs and video decoders to support SD to FHD. With its proven quality, Nextchip has settled in as a top image processing semiconductor company.

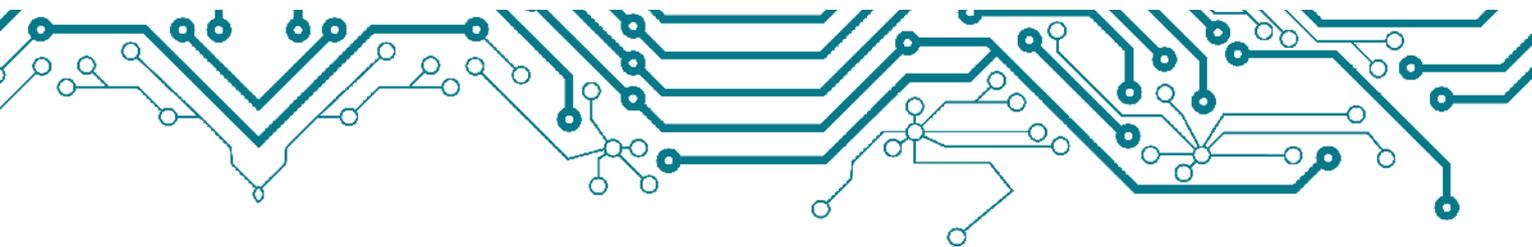
Based on rich experience in the security market, AHD maximizes compatibility with conventional analog products to best fit manufacturers' needs. AHD1.0 RX (NVP6114) can accept 960H CVBS/COMET and

720p (AHD) signals. Also, AHD2.0 RX (NVP6124) can accept 960H CVBS/COMET, 1280H CVBS/COMET, 720p (AHD1.0) and 1080p (AHD2.0). As AHD2.0 is seamlessly compatible with AHD1.0, AHD2.0 can accept all the above resolutions.

**DOUBLED CHANNEL DVR WITH NRT FUNCTION**

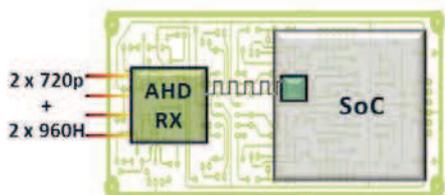
Generally, as most manufacturers know, FHD signal is transmitted by using 16-bit rate. However, AHD processes FHD signal with 8-bit (HD byte-interleave). Due to this characteristic, manufacturers can make doubled channel DVRs, which allows for the connection of more cameras without changing the SoC. Just setup the recording mode as NRT — it records in NRT mode but displays in real time. Additionally, there is no need to develop one more 4-channel DVR to extend a solution, because AHD enables the manufacturers to compose 8-channel DVR with only one RX and only one SoC.

In some cases when recording in real-time is not needed, AHD is the most suitable solution when trying to upgrade current systems

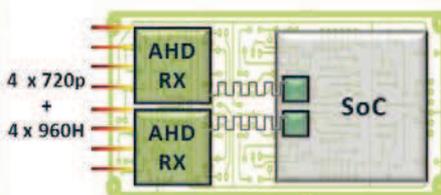


## Flexible System Configuration

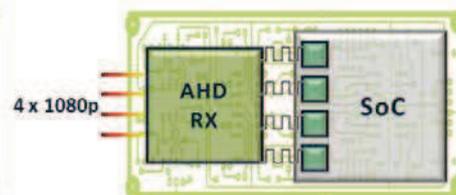
*“Reusable SoC & H/W Platform”*



**Cost-effective  
4CH 720p@15fps  
DVR Solution**



**Flexible  
8CH 720p@15fps  
DVR Solution**



**High-end  
4CH 1080p@30fps  
DVR Solution**

Flexible from low-end to high-end.

to FHD level. AHD keeps the range of 960H price level and minimizes the required HDD storage capacity. This co-effective system lightens the burden of manufacturers as well as the final customers who are facing fierce competition.

### MULTI PLAYS HYBRID DVR

The key feature of NVP6124 (AHD2.0 RX) is that it can receive 960H, 1280H(CVBS/COMET), and 720p (AHD1.0, 1080p (AHD2.0)) separately. Grasping the concept of AHD enables the ability to have hybrid DVRs that can display multiple scenes with various resolutions simultaneously. Additionally, it upgrades 960H DVR to 720p DVR under the same channel conditions. It is hard to realize perfectly seamless images, but it is an evitable phenomenon and more importantly AHD can show high quality images the same as 720p.

In the end, for upgrading the resolution of certain cameras on a system, there is no further work except for exchanging the current camera to

a higher resolution. This can minimize the burden of the customers. In this transition period to FHD resolution, AHD is one of the best solutions, which meets the needs of both final customers and manufacturers.

### NEXT AHD

AHD is the new transmission solution with integrated unique cable driving technology powered by Nextchip. The better image quality and longer distance are guaranteed on existing infrastructures. It makes the entire system more cost-effective. After 17 years in the video surveillance industry, Nextchip knows the needs of final customers and manufacturers. Nextchip has upgraded and developed various lineups. This is also true for the AHD lineups. Rather than pushing manufacturers to choose one solution, Nextchip presents minor upgraded, function-added, and customized versions to meet the needs of each manufacturer. This point can be called “system-friendly.”

Currently, AHD line-ups divide into ISP, TX, and RX of AHD1.0 (720p) and

AHD2.0 (1080p) which counts up to 10 items. By presenting AHD2.0 at 2014 Security China, Nextchip will begin its new journey into the analog FHD market. Early next year Nextchip will present AHD1.1 (NVP6114A), which is an upgraded/P2P version of NVP6114 (AHD1.0), reflecting the feedback from final customers and manufacturers. This year and the coming years will be another new époque for analog HD transmission solutions. **ANS**

