

## Standalone DVRs: Power-packed software sustains industry

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Compression solutions, image quality and multichannel input are key R&D initiatives.

China DVR suppliers are directing product development efforts toward enhancing software functionality, hoping to release more total-solution devices in 2010. Dual-compression MPEG-4 and H.264, suited to low-bandwidth transmission, are generally adopted. To avert compatibility issues arising from the latter standard, some makers use MPEG-2 and M-JPEG.

Blunet's DVR3654 model supports H.264 video compression and simultaneous playback, recording and networking.

The selection consists of stand-alone and PC-based units, which support a maximum of 16 and 48 channels, respectively. The first type is regarded as mainstream. Portable or mobile versions are also manufactured for specialized applications.

Variants adopting software compression generally deliver better performance than dedicated hardware models. The former has a flexible architecture and enables 48-channel realtime recording via a mainstream \$100 CPU. At half the overhead of its counterpart, the first also supports full highdefinition recording and multiple HDD cycles.

As it is more cost-efficient to purchase compression solutions and install them in a PC, makers offer them as part of the DVR line, mostly to the entry-level sector. Low-end units with such capability, however, are becoming prevalent, and many project demand will increase in months ahead. These models have basic features, including one to four channels, MPEG-4 or H.264 compression and CIF resolution. Housing designs are usually compact and streamlined.

China's DVR shipments dropped in 1H09 in the aftermath of the global financial crisis. A number of establishments deferred security system installations and upgrades, concentrating resources on keeping business alive. This further depressed demand and dented margins.

Hardest hit were small and midsize companies, most of which cut exports by 50 percent last year. Some shut down operations due to low profits. Only large manufacturers remained viable amid the cutthroat competition.

Makers, however, expect sales to recover in coming months as demand started picking up in 3Q09, although growth projections remain moderate.

Players such as Zhejiang Dahua Technology Co. Ltd are broadening selections in anticipation of an upswing. As with many others, the supplier shifted focus to the more lucrative high-end segment. It recently launched the upscale Hybrid and HE series.

As purchasing power remains restricted, a number of makers have revised marketing strategies to attract new buyers and retain old customers. Some devised easy payment schemes, gave special rates or shortened the delivery time.

The bulk of export models are PC-based. Most security product manufacturers offer only DVR cards bundled with software solutions. Many, however, can provide the complete package on buyers's requests.

Product range

Component sourcing

Industry snapshot

## Product range

Mainstream capture cards from China support 1 to 16-channel video input and adopt a PCI interface. New units boast PCI Express, which promises a higher bandwidth and power supply capacity.

Resolutionwise, CIF for remote surveillance applications and D1 for localized storage and playback are typical. VGA is prevalent in portable DVRs. As superior image quality is a key R&D objective, more units with adjustable clarity and frame rate are rolling out.

Releases support full HD recording at 720 or 1080p, made possible by new-generation ICs. For enhanced compatibility with various HD products, VGA and HDMI ports have been incorporated in new models.

VxWorks, which features higher stability and is less prone to errors, is slowly displacing Linux as the mainstay OS. Units have up to eight 3.5in HDD slots. Versions with a rewritable CD or DVD drive are emerging, as are varieties with USB and eSATA interface. These facilitate and supplement data backup.

Some makers are adopting multistream technology to increase the bandwidth. It enables low bit rate for remote surveillance and high bit rate for local storage. This likewise allows the DVR to interface with small networks and mobile phones.

Hybrid models are also on the rise. These are compatible with both analog and IP front-end devices. Value-added functions, including GPS navigation and GSM/GPRS wireless transmission, are being introduced, particularly in portable units.

New mobile DVRs feature lower power consumption. R&D in this segment, which centers on cosmetics, has yielded ultracompact versions that are shock- and dust-resistant. Recent models have broader operating temperature and dynamic power ranges, and enhanced anti-EMI capability.

Regardless of form factor, a built-in web server, 1 to 4-channel alarms, and an RJ-45 10/100Mbps LAN, RS-485 or RS-232 PTZ control, and audio I/O ports are common.

Quotes vary depending on the number of channels, compression algorithm, resolution, functions and chip solutions adopted.

Makers forecast slight price cuts in months ahead as competition tightens and component costs slide.

China-made DVR products range from \$40 to \$200. Software compression cards are regarded as entry level and are \$10 to \$50. The hardware compression version is \$50 to \$200. Stand-alone DVRs are \$80 to \$500.

Suppliers are banking on their price advantage over foreign competitors to sustain growth in the line. As such, they will continue to streamline overhead to facilitate lower quotes. The majority uses software from third-party providers rather than manufacture these in-house to minimize outlay.

The model HB7004 DVR from Beijing Hanbang is equipped with local and remote alarms and notifies users via mobile phone, pager and landline.

### Component sourcing

To streamline product engineering, reduce power consumption and keep costs low, most makers adopt SoC solutions, which also improve the systems' anti-jamming capability. Hisilicon and Faraday are the main providers of such components. Some mainland China players source from local and Taiwan partners.

Performance is largely determined by the type of ADC ICs in the software compression card. Most makers use Techwell's TW680x series and Conexant's CX2388x chips, which are optimized for flexible resource configuration.

These are, however, more expensive than the CX25878 from Conexant, common in most low-end DVRs.

DSP encoders are mainly employed in midrange and upscale embedded units. They accommodate different types of compression algorithms and functions. TI's DM64x series, NXP's PNX-1500 and 1700, and ADI's Blackfin BF53x are staple in China.

Entry-level models typically have ASICs, which are generally less expensive and easier to develop. Upstream players usually bundle these with comprehensive reference hardware and software designs. The ICs have better thermal dissipation and the same imaging quality as others but at a lower cost, according to interviewed companies. DSP chips are used in both hardware compression and embedded DVRs.

The model AOP-3016HD DVR from Shenzhen Angesi has 16-channel video input and 400 and 480fps recording and playback, respectively.

### Industry snapshot

The DVR industry in China is composed of at least 200 suppliers, all of which are active exporters. The major players include Dahua and Hangzhou Hikvision Digital Technology Co. Ltd. New entrants are usually established CCTV manufacturers or makers of related security products.

The cities of Shenzhen and Hangzhou in Guangdong and Zhejiang provinces, respectively, are the biggest sourcing centers. These boast a comprehensive supply chain and strong export infrastructure.

Shenzhen hosts the most number of companies. It is regarded as China's hub for security products and is the base of operations for most major players.

Hangzhou, meanwhile, is the seat of DVR technology. Many midsize and large manufacturers are located there.

The development of the industry will be slow but stable, according to interviewed companies. Its scale, however, will shrink slightly as some makers succumb to competition in years ahead.

Suppliers that will remain in the line will increase efforts to promote OBM business. Large enterprises plan to continue

adjusting product strategies or venturing into the low-end segment. SMEs, meanwhile, will enhance customization capability.

Note: All price quotes in this report are in US dollars unless otherwise specified. FOB prices were provided by the companies interviewed only as reference prices at the time of interview and may have changed.

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