



Crystal

The flexible Hybrid Video Recorder

The Crystal is a low cost but highly reliable, flexible and robust 'hybrid' digital video recording solution for medium sized video surveillance projects in schools, hospitals office buildings, car parks, retail environments and a wide range of other applications. It can accommodate up to four 3.5" internal hard drives and enables users to benefit from the technology built into the latest generation of IP network cameras whilst also deploying traditional analogue cameras.

High performance and flexible recording

Easy to install and operate, the Crystal is able to simultaneously record video images from a combination of analogue and IP network cameras. Up to 16 channels can be recorded simultaneously from up to 16 analogue or 16 IP/megapixel cameras, with a choice of H.264, MxPEG, MPEG-4 or MJPEG compression. Up to 4 HDcctv cameras can be specified at the time of the order.

Easy to use

Wavestore's remote monitoring software allows users to securely monitor real-time live images or retrieve recorded video over the network, whilst multiple units

can be configured into a server group to support large and distributed video surveillance applications.

Simple drag and drop function enables each user to create unique multiple display preferences, whilst the Crystal offers an extremely fast search facility to allow users to be able to quickly review recorded images of any incident.

Export to the native Wavestore format and benefit from features such as encryption and image authentication (watermarking). Alternatively, convert the video to any of a wide selection of standard formats such as MPEG, Flash Video, AVI, and many more.

Ultra reliable

The Crystal, as is the case with other Wavestore digital recording systems, utilises an ultra reliable Linux based open software platform. It is supplied with a full one year return to base Warranty.

Recording System	
Video standards	NTSC or PAL standards, HDcctv and IP
Video resolution	QCIF, CIF, 4CIF, D1, HD720, HD1080, VGA, megapixel, custom
Rate at Full D1	Up to 50/60 fps per input - 800/960 fps per server
Video displays	Adjustable in size and number
Multiscreen displays	1, 4, 9, 16 and customisable layouts
Still image	JPEG/BMP/PNG
Record type	Continuous, schedule, motion, alarm, event and digital input trigger
Recording tracks	3 independent tracks assignable to different HDDs with different settings
Overwrite modes	Configurable auto deletion and overwrite function by time or disk allocation
Detection	Motion, camera moved, darkening, video loss
Areas of interest	Configurable areas to target analogue analytics
Privacy Mask	Configurable mask to avoid viewing sensitive areas within a camera view
Reported events	Full system monitoring including SMART disk health monitoring
Reporting events	Via screen, email or TCP/IP message
Operating System	Embedded Linux platform
Time zone	Regional setting available
Languages	English, Arabic, French, German, Hungarian, Italian, Japanese, Portuguese, Russian, Spanish and Turkish

Remote Viewer Client

Remote users	5 users concurrently as default - Field upgradable
Operating Systems	Windows (7, Vista, XP), Linux (Ubuntu, Fedora, Debian), and Mac OS X
Web Browser Client	Available on any device supporting Adobe Flash or HTML5 H.264 Video – includes: iPad, iPhone, Android, Firefox, Chrome, Internet Explorer

Playback, Find, Copy	
Playback functions	Linear rewind capability - Variable speed slider
Playback speed	Up to 8192 lps
Playback mode	Multi-way: play, rewind, jump, fast-forward and frame-step up to 16 cameras simultaneously
Slow motion playback	Available
Zoom	Unlimited digital zoom by mouse wheel
Search mode	Date, time, motion, alarm, notes
Intelligent search	Highlighted activities on recorded streams
Copy mode	Backup multiple cameras including linked audio
Copy devices	CD, DVD, USB, HD

Security

Password profile	Multi protection levels
Cameras/displays	Accessible on a per-user basis
Configuration files	Save and restore capability for any server in the group
Digital watermarking	Image authentication with real-time checking
Encryption	Up to 4096 bit encryption
Diagnostics	Remote, secure diagnostics, repair functionality available
Remote administration	Remote control via TCP/IP network, including restart/rebooting
Automatic system re-start	After power loss (when power resumes)

Systems Modules

Maps	Multiple level maps showing camera alarms, speakers, microphones, etc. - Optional activation
Alarms	Logging, notification, and viewing associated video - Optional activation
Dewarping	Dewarp real time and archived fish-eye images from hemispheric cameras - Optional activation
Video Analytics	People counting and tracking, queue management, retail footfall analytics, ANPR, traffic monitoring, perimeter security, abandoned object, stolen object and intruder detection - Optional activation

To be referred to Wavestore V5.6
 Coming soon

Cameras

Analogue inputs	Up to 16 channel - BNC 1 Vpp, 75 ohm - Auto termination
HDcctv inputs	Up to 4 channel
Network inputs	16 (IP/megapixel) channel
Hybrid configuration	Up to 32 video channels recorded simultaneously
Compression formats	H.264, MPEG-4 , M-JPEG, MxPEG, Wavelet
PTZ devices	Full 3 axis control (PAN, TILT & ZOOM) using a 3-axis mouse or joystick
PTZ	Preset and Tour
IP camera setup	Drop down menu
IP camera ping	Available
IP camera web browser setup	Direct access
IP camera discovery	uPnP, Bonjour
Camera and tracks	Multiple recording profiles

Audio

Inputs channels	Up to 16
Recording format	G. 711 (8K samples per sec)
Sampling rate	16kHz or 8kHz
Features	Lip-synchronised playback and live functionality for video/audio, bi-directional

Alarms

Inputs/Outputs	20/20 via USB I/O Device - Optional
Notification	Via viewer client
Alarm actions	Record on alarm, text overlay, boost recording rate, trigger output, spot monitor, PTZ camera on preset, notify client, run script, emails, flashing light, sound alerts
Alarm triggers	Video loss, darkening, motion within image, camera movement, alarm input, login succeeded, login denied, fault, warning
Other features	Alarm event logging, enable/disable on schedule
Watchdog function	Auto-reboot of system in case of system failure

Storage

Internal HDD	Up to 4 x 3.5" SATA-2 internal HDDs
Hot-Swappable HDD	NA
NAS and SAN storage	Via iSCSI interface
RAID level	NA

Network

Network ports	1 port
Network bandwidth	1 x 1000 Mbps
Supported protocols	TCP/IP, DNS, SMTP, NTP, SSH, HTTP, RTSP
Configuration protocol	Static IP entry
Time sync (NTP)	Automatically synchronized to other Wavestore servers or external time source
Bandwidth control	Per user or per Wavestore

Electrical

Input voltage	100-127/200-240V
Typical power consumption	100W (2 x 2TB HDDs)
Power supply rating	300W
Redundant power supply	Single 80 PLUS

Environmental

Operating Temperature	5 to 40°C (41 to 104°F)
Relative humidity	Humidity 20 to 40% RH (non-condensing)

Optional Interfaces

Virtual Matrix	WaveMatrix - connects the Wavestore recorders to a monitor wall which can be controlled either by Master PCs or joysticks - optional
Keyboard and joystick controller	WaveHelm - designed to provide an ergonomic and configurable user interface - optional
Joystick controller	USB 3-axis joystick controller with 8 buttons

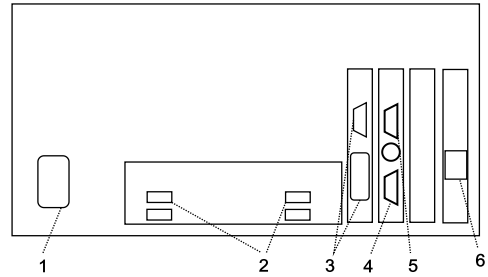
Mechanical

Chassis form factor	Compact tower
Dimension (W x H x D)	362 x 425 x 184 mm
Shipping dimension	530 x 575 x 290 mm
Shipping weight	13kg (with 1 HDD)

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Coming soon

Crystal rear panel

1. 90 to 240V AC input
2. USB 2.0 (4 ports – plus 2 additional ports on the front of the unit)
3. Gigabit LAN
4. VGA or DVI output (not both simultaneously)
5. 8 channel audio inputs
6. 8 channel video input card



Note: some of these items are optional and must be specified at the time of order

Crystal standard part numbers

C08V1-2R1-H00	Crystal 8 analogue inputs – 1 HDD 2Tb – 0 IP inputs
C08V1-4R2-H04	Crystal 8 analogue inputs – 2 HDDs 2Tb – 4 IP inputs
C16V1-4R2-H00	Crystal 16 analogue inputs – 2 HDDs 2Tb – 0 IP inputs
C16V1-8R4-H16	Crystal 16 analogue inputs – 4 HDDs 2Tb – 16 IP inputs
C00-8R4-H16	Crystal 0 analogue inputs – 4 HDDs 2Tb – 16 IP inputs
C04D1-4R2-H00	Crystal 4 HDcctv inputs – 2 HDDs 2Tb – 0 IP inputs

Note: Wavestore uses surveillance grade hard drives

Wavestore standard product range

	Opal IP	Crystal HY	Rock	Granite
Camera inputs				
Analogue inputs	NA	8 ch*	Up to 32 ch	Up to 32 ch
Network inputs	4 ch* to 9 ch	On request*	Up to 64 ch	Up to 64 ch
HDcctv inputs	NA	NA	On request*	On request*
Server specifications				
Internal HDD storage°	2 Tb	2 Tb* to 8 Tb	5 x 3.5"	16 x 3.5"
Hot-swappable HDD	NA	NA	✓	✓
IP Gigabit network ports	1	1	2	2
Redundant power supply	NA	NA	Optional	✓
Typical power consumption	30W	70W	180W	350W

*Field upgradable

° Optional external storage is available for the entire product range

Wavestore Mobile DVR: a compact and powerful integrated video recording solution ideal for mobile applications is due to release.

In order to evaluate the Wavestore interface and performance please visit our web site and download the **Live Demo Software**. This will enable you to experience the ease of use of the interface and view high quality images from a selection of analogue and network cameras. A **Web Viewer** option that does not require any software installation is currently in development.

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