SONY®

Sony
Surveillance
Systems

HSR Series Digital Surveillance Recorders

HSR-1 & HSR-2

Hybrid digital recorders for high-performance digital video recording & archiving

In 1999 Sony introduced the HSR-1

digital hybrid recorder, a new type of surveillance recorder that overcomes the limitations of both analog and digital recorders. The HSR recorder provides better picture quality, longer recording, and greater reliability than analog recorders. It also eliminates some of the common problems with digital recorders such as long upload times.

Sony now further strengthens its position in the surveillance recorder market by introducing the improved HSR-1 and the new HSR-2 recorders. The HSR-2 offers two exciting new features: increased recording capacity on a much larger hard disk drive and the ability to playback-during-recording.

DV Tape Drive

DV Signal Transfer

Hard Disk Drive

< HSR-1 Recording Process >

New features of the HSR-1 and HSR-2

	HSR-1	HSR-2
Playback-during-recording	No	Yes
Network capability with SNT-V304*	Yes	Yes
Larger HDD capacity	More than 4 GB	More than 20 GB

*Version 2.00 or higher required

The HSR advantage: HDD/DV Hybrid recording

The HSR recorders use both a hard disk drive (HDD) and a DV (digital video) tape drive for storage. Images are first stored on the hard disk and then, at given intervals, are automatically transferred to DV tape. Unique DV tape technology adds the advantages of high-density recording, large storage capacity and superb picture quality-in other words innovative video performance. The hybrid approach of this system dramatically reduces the burden on the tape drive and minimizes maintenance.

Why the hybrid recording system is superior to conventional digital recorders

To many, digital recording means recording directly to a hard disk. But that is not the whole story: even digital systems can compromise picture quality because of storage-capacity limitations. Both for archiving purposes and to make space for new recordings, data on the hard disk must be transferred to another medium such as DAT. With the HSR's hybrid recording capabilities there are no compromises: the large storage capacity provides high picture quality, and archiving from the HDD to DV tape is done automatically while the unit continues to record.

A Wide Variety of Applications for the Surveillance Market

Bank headquarters and branches

An effective surveillance system is indispensable to banks; it is especially important to monitor ATM machines, cash dispensers, and windows around the clock. HSR recorders are especially suited to the needs of banks: their excellent storage capacity and physical compactness allow them to be placed discreetly and unobtrusively where required. And because it is essential to keep recorded tapes for long periods to protect against fraud, DV cassette tapes are very compact and take up less space than standard cassettes.

Cash vault operations

The HSR recorders combine outstanding image quality, long term recording capability and high refresh rates, making them ideal for cash vault operations. The HSR recorders have a horizontal resolution of more than 500 TV lines in Super Mode, and the HSR refresh rates in High mode is five times higher than conventional analog time lapse recorders – helping make sure that you do not miss a thing.

Office buildings

Monitoring the inside and outside of office buildings is essential for the safety and security of both the employees and the facility itself. Up to 16 surveillance cameras can be connected to one HSR recorder and, by installing cameras in entrances and exits, the HSR can record for long periods, allowing you to monitor people entering and leaving the building. Unlike images recorded using conventional equipment – which often do not have sufficient clarity – HSR-recorded images provide excellent and consistent picture quality.

Stores and shopping malls

It is extremely important to keep goods safe and secure from theft in stores, especially at night. The HSR recorders have up to 16 camera inputs, allowing you to create a surveillance system to suit your application and facility. The recorders' excellent image quality and high refresh rates make a vital contribution to the success of video evidence used in criminal prosecutions.

Features

Playback-during-recording (HSR-2 only)

The HSR-2 features a playback-during-recording function, allowing you to view previously recorded images while continuing to record. This function allows you to quickly verify whether an alarm is real or false – with the HSR-2 continuing to record.
The HSR-2 can also be programmed to playback a set number of minutes from the instant you press the pre-reverse play button.

20 GB HDD (HSR-2 only)

The 20 GB HDD (Hard Disk Drive) of the HSR-2 holds a large volume of data – approximately one third of the capacity of a 270-minute DV tape. For example, in 24-hour mode using a 270-minute tape, eight hours can be recorded to the HDD alone. This allows you greater peace of mind because images will continuously record to the HDD if a problem recording to DV tape should arise. Another advantage is that the data on the HDD can be accessed faster than from the tape.

Network capability with the optional SNT-V304*

The HSR recorders give you the option to expand your existing surveillance system. By connecting the SNT-V304 Video Network Station to either HSR recorder, your surveillance system is network-ready. The SNT-V304 gives you full remote control of the HSR recorders using either a LAN or WAN, or connecting via the Internet. The SNT-V304 also makes the HSR-2's playback-during-recording feature especially effective, because it allows remote-site auditing over virtually any network.

*Version 2.00 or higher required

Four Alternative Quality Modes

The HSR recorders can be switched between four levels of picture quality: Super, High, Middle and Low. This enables you to balance between picture quality and recording time as appropriate to your application. Super mode provides excellent picture quality with a horizontal resolution of more than 500 TV lines. High mode provides a much higher S/N ratio and equivalent resolution.

More Shots Recorded

Large Storage Capacity
A 270-minute DV cassette tape provides a storage capacity of more than 60 GB. This means you can handle a larger quantity of images than you could using conventional equipment.

Number of recorded pictures for each mode

Super mode	945,000
High mode	1,890,000
Middle mode	3,779,000
Low mode	7,558,000

Long Recording Time
The HSR recorders' long recording times free you from having to change your tapes as often as is required with conventional equipment.

DV 270-minute tape

Number of days
when recorded at one second intervals
with one camera input

Super mode	10.9 days
High mode	21.8 days
Middle mode	43.7 days
Low mode	87.4 days

High Refresh Rate
With conventional equipment, there is always the possibility that key scenes, such as criminal activity and alarm incidents, may be missed during the long recording interval of each camera. The HSR recorders are capable of recording images at a high refresh rate for each camera, so you no longer have to worry about failing to record key scenes.

Recording interval per camera (in High mode)

24-hour recording mode with 16 camera inputs	0.7 sec.
1-week recording mode with 8 camera inputs	2.6 sec.

High Reliability and Less Maintenance

Reduced Use of Tape Mechanism
The hybrid configuration of HDD and DV tape drive achieves higher reliability and reduces maintenance. While conventional equipment has to work continuously during the recording operation, the tape transport and heads of the HSR recorders are stationary most of the time (because the DV tape drive works only while the image data is being transferred from the HDD). Therefore the mechanical transient motion and head running time are drastically reduced to one quarter* of the time taken by conventional equipment, resulting in excellent reliability and reduced costs.
*in 24-hour recording mode using a 270-minute tape.

Features

Multiple Protection

In the event of a recording problem, the HSR recorders provide multiple protection. If the HDD fails, the HSR records the image data directly to DV tape. Conversely, in case of DV tape drive failure, recording continues on the HDD. For additional protection, the HSR recorders check whether data is accurately recorded to tape. If a recording failure is detected, the HSR re-records the same data to tape.

Less Space Required

Compact Body

The HSR recorders feature a compact body and are similar in width to a 14-inch monitor.

Compact Storage Medium

A DV cassette is only one third in volume of a VHS tape. This compact size means that storage-space requirements in your tape library are substantially reduced.

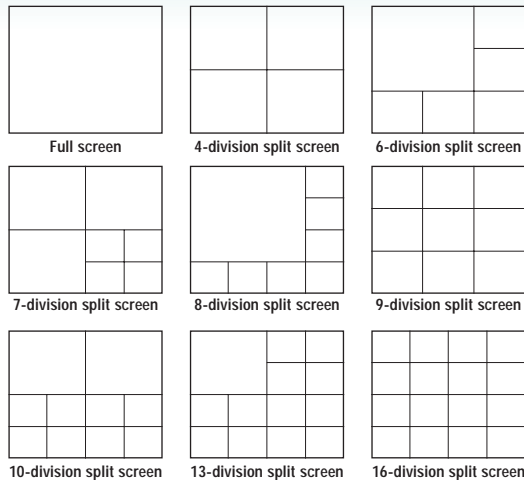## System Versatility

16 Camera Inputs

The HSR recorders have four camera inputs as standard. Up to three optional HSRA-11 four-input boards can be installed, thereby providing up to 16 camera inputs.

Built-in Multiplexing Capability

Because the HSR recorders have a built-in multiplexing capability, an external multiplexer, or switcher, is unnecessary. The HSR-1 uses duplex multiplexing, which allows for independent recording and monitoring. The HSR-2 incorporates triple multiplexing, which achieves independent recording and monitoring while playing images back. Both HSR recorders independently record and monitor up to 16 camera inputs. A choice of monitoring patterns helps you create the optimum monitoring environment for your particular application by freely assigning multiple cameras to a single monitor.

Monitoring patterns

Full screen	4-division split screen	6-division split screen
7-division split screen	8-division split screen	9-division split screen
10-division split screen	13-division split screen	16-division split screen

Output for a Second Monitor

The HSR recorders have two monitoring outputs: "A" output for a first monitor and "B" output for a second monitor. The "B" output can be set to show the same as the "A" output (a full screen of one selected camera image) or it can switch sequentially between all connected cameras. For example, it is possible to monitor the image from one key camera on the second monitor, while checking the playback images on the first monitor.

Flexible Camera Assignment

There are five preset recording modes, which can be flexibly combined with picture quality mode, tape length, recording time, number of camera inputs and the recording cycle of each camera. This feature allows you to assign cameras as you like. It is possible, for instance, to record with all cameras in High mode during the day but some of these cameras can be set to record in Super mode at night.

RS-232C Interface

The HSR recorders are equipped with an RS-232C interface for communication with external equipment, such as personal computers, to facilitate machine control, status settings, parameter preset and user data read/write. The optional SNT-V304 Video Network Station also connects with this interface.

37-pin Parallel Port

The 37-pin parallel I/O interface on the HSR recorders provide 12 V DC, GND (ground) as well as control input and output functions. The pin functions can be freely configured for a particular application via the setup menu.

Flexibility in Alarm Mode

Because alarm and timer recordings can be combined, the HSR recorders can be set in normal recording mode during office hours and alarm recording mode at night. You can also preset the length of time that images from the alarmed camera should be recorded. An alarm display buzzer is also available. With five different alarm-recording modes, the HSR recorders provide a high level of functionality during alarm incidents.

Normal mode
To capture more and even sharper images, the HSR recorders switch to recording modes with higher picture quality and/or refresh rates when an alarm is detected.

Pre-Alarm mode
Records images before an alarm event. Pre-alarm images can be helpful in determining how an intrusion occurred.

Interleave mode
Accelerates the recording cycle of the alarmed camera.

Event mode
Begins recording when an alarm is detected.

Frame mode
A single frame, in Hyper mode, is recorded immediately after an alarm is detected.

Continuous Recording Function

The HSR recorders can record images continuously – even while changing or rewinding tapes – so you don't have to worry about interruptions in recordings.

Sophisticated Security Functions

The function lock button on the front panel makes it impossible to change settings accidentally. Also, by typing in a password, either with the ten keys on the front panel or from a personal computer via the RS-232C interface, all the functions can be locked. Moreover, three levels of password protection are provided.

Water Mark

Using an original water mark system, the HSR recorders can identify image data that has been artificially altered. When an alternation is detected, or the original video has been tampered with in any way, a message is displayed on screen.

Intelligent Search Functions

For smooth search operations, the HSR recorders offer a variety of search functions such as time/date search and alarm search. These can be controlled from the main unit or through the RS-232C interface. The HSR recorders are also capable of user data read/write via the RS-232C interface, allowing the specific user data to be accessed from a personal computer. Noiseless picture search can also be carried out from the main unit or by using the Jog/Shuttle dial of the optional remote controller SVRM-100A.

REC END SEARCH

This convenient feature allows you to search for the end of the most recent recording on tape. Recording can then be continued from this point.

Quick Recording Start

Event Recording
In the past, event recording has been difficult to achieve because sometimes the trigger signal is received too late. The Pre-alarm feature of the HSR recorders ensures that this information will no longer be missed.

Power On Recording
In the Power On Recording mode, the HSR recorders automatically start recording when power is turned on. This allows unattended automatic timer operation.

Frame Recording in Hyper Mode

In addition to the four alternative quality modes, the HSR recorders offer highest-frame-quality Hyper mode to meet specific recording requirements. In this mode, 486,000 pictures can be recorded on a 270-minute tape.

Specifications

General

Mass	10 kg (22 lb 1 oz)
Dimensions	355 (W) x 125 (H) x 410 (D) mm (14 x 5 x 16 1/4 inches)
Power requirements	AC 100 V to 120 V, 50/60 Hz
Power consumption	58 W (without options), 78 W (with full options)
Operating temperature	5 ˚C to 40 ˚C (41 ˚F to 104 ˚F)
Operating humidity	Less than 80 %
Usable tape	DV*1 or DVCAM*2 cassette tape (standard size, mini size)
HDD capacity	More than 4 GB (HSR-1); More than 20 GB (HSR-2)

System

Video signal	EIA standard, NTSC color
Recording system	Rotary two-head helical scanning system Digital components
Quantization	8-bit
Sampling frequency	13.5 MHz (4 : 1 : 1 components)
Recording/Playback time	Maximum 9999 hours (Approx. 400 days)
Fast forward/Rewind time	Less than 3 min. (with a 270-minute tape)

Video

Input	VBS, VS (BNC type) : 1.0 Vp-p, 75 Ω, unbalanced
Output	VBS (BNC type) : 1.0 Vp-p, 75 Ω, unbalanced S-VIDEO (DIN 4-pin) : Y : 1.0 Vp-p, 75 Ω, sync negative C : 0.286 Vp-p, 75 Ω, at burst level
Quality mode	Super, High, Middle and Low modes (selectable) (Field-by-field recording) Hyper mode (Frame-by-frame recording with a trigger signal)
Horizontal resolution	More than 500 TV lines (Hyper and Super modes) 360 TV lines (High mode)
Signal-to-noise ratio	More than 48 dB

Built-in Multiplexer

Input	4 inputs (up to 16 inputs with optional boards)
Output	2 outputs
Split screen display	9 patterns

Connectors

|	
Parallel input/output	D-SUB 37-pin (1) Input : 24 terminals to be freely assigned (Alarm, Clock set, Series rec, Alarm cancel, etc.) Output : 8 terminals to be freely assigned (Auto off, Tape end, Series rec, Rec tally, etc.)
Control S	Stereo mini (1)

Supplied Accessories

AC power cord (1)
Operation manual (1)
DV 270-minute tape (1)
37-pin parallel connector (1)

*1 Because of the unique recording format of the HSR recorders, tapes recorded on the HSR recorders cannot be played on conventional DV equipment.
*2 A DVCAM 184-minute tape, with the same storage capacity as a DV 270-minute tape, can be used with the HSR recorders.

Dimensions

355(14)

120(5)

410(16 1/4)

unit: mm (inches)
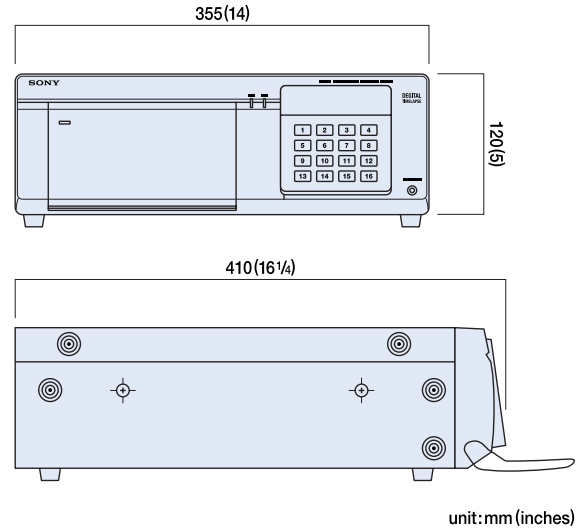
Optional Accessories

HSRA-11 (Input Board)

SVRM-100A (Remote Control Unit)

SNT-V304 (Video Network Station)

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