

SONY[®]

Digital Hard Disk Recorders

HSR-X Series



HSR-X Series Digital Hard Disk Recorders

HSR-X200	Single Channel Recorder (with 80/160 GB HDD)
HSR-X200/16	Single Channel Recorder (with 160/320 GB HDD)
HSR-X216/32	Multi Channel Recorder (with 320 GB HDD, 16 Camera Inputs)

Sony's HSR-X Series of digital hard disk time-lapse recorders deliver superb quality images, outstanding reliability and greater flexibility to your surveillance systems. Incorporating the Motion-JPEG compression format, these recorders provide high-quality, high-resolution images and high refresh rates. With each of these recorders, you get all the benefits associated with a digital format – clear, crisp, undistorted images and quick access to images.

An added advantage of these HSR-X recorders is their network capability. Users can remotely access, review and control the recorded information via a network using an optional LAN PC Card*. In addition, these recorders offer the added benefit of being able to download archived data to Memory Stick® media, Compact Flash Card or Micro Drive with a PC Card Adaptor. These remarkably reliable recorders also reduce maintenance costs due to their hard disk technology, since there are no tape transport and/or head service costs compared to analog time-lapse recorders.

The HSR-X Series offers a choice of three recorders to suit a variety of surveillance applications and systems. The HSR-X200 is a single channel recorder with an 80 GB HDD (Hard Disk Drive) whereas the HSR-X200/16 is also a single channel recorder but with an **expanded** hard drive capacity of 160 GB. The HSR-X216/32 is our new multi channel recorder with an extremely large 320GB HDD and a built-in 16 channel multiplexer, all in one compact unit.

The HSR-X200 and HSR-X200/16 single channel digital recorders can be easily installed in existing surveillance systems as a powerful alternative to analog time-lapse VCRs. The HSR-X200 and HSR-X200/16 recorders are drop-in replacements for analog time-lapse VCRs that are typically used with multiplexers**.

The HSR-X216/32 is a high quality, multi channel recorder that combines the functions of a recorder and multiplexer into one unit. This recorder includes versatile functions to allow live and recorded images from one to sixteen camera inputs to be shown on a monitor in single-camera, four-camera, nine-camera or sixteen-camera displays. The HSR-X216/32 can display live images that are being recorded by a monitoring camera in a split-screen or playback images in a split-screen. Due to the large capacity 320 GB HDD, the HSR-X216/32 recorder dramatically extends recording times.

With this broad reaching, feature-rich lineup, Sony's HSR-X Series of recorders offer choice and flexibility – making them ideal for a wide variety of surveillance applications.

* Contact your local Sony sales office for compatible LAN card information.

** Drop-in replacement for multiplexers that accept external switch pulse.

Features

High-Capacity HDDs (ATA/ATAPI-5 Standard)

Two optional HDDs (HSBK-X201: 80 GB for HSR-X200 only, and HSBK-X201/16:160 GB for HSR-X200 & HRS-X200/16) can be installed to increase record time or provide mirroring** function for the HSR-X200 and HSR-X200/16.

Maximum recording time in field recording mode*

	HSR-X216/32
Built-in HDD capacity	320 GB
High mode	2686 hours, 112 days
Hyper mode	1653 hours, 69 days

* 1-channel input, 1 picture/s

** See section on HDD Mirroring Function.

	HSR-X200	HSR-X200/16
Built-in HDD capacity	80 GB	160 GB
with the HSBK-X201	160 GB	N/A
with the HSBK-X201/16	240 GB	320 GB
High mode*		
with the built-in HDD	671 hours, 28 days	1343 hours, 56 days
with the HSBK-X201	1343 hours, 56 days	N/A
with the HSBK-X201/16	2014 hours, 84 days	2686 hours, 112 days
Hyper mode*		
with the built-in HDD	413 hours, 17 days	826 hours, 34 days
with the HSBK-X201	826 hours, 34 days	N/A
with the HSBK-X201/16	1239 hours, 52 days	1652 hours, 69 days

High Resolution & High Picture Quality

The HSR-X Series of recorders deliver high-resolution, high-quality images using the Motion-JPEG compression format. These recorders capture high-resolution pictures of 720 x 240 pixels in field recording mode. In addition, the HSR-X200 and HSR-X200/16 can acquire higher resolution images of 720 x 480 pixels in frame recording mode.

These recorders also give you the flexibility to select a balance between picture quality and recording time to meet your application requirements. You can select from five levels of picture quality recording modes: Hyper, Super, High, Middle and Low.

Picture resolution

	HSR-X200	HSR-X200/16	HSR-X216/32
Field recording mode (H x V pixels)	720 x 240	720 x 240	720 x 240
Frame recording mode	720 x 480	720 x 480	NA

Picture quality mode

Hyper	52 KB/picture
Super	44 KB/picture
High	32 KB/picture
Mid	24 KB/picture
Low	17 KB/picture

High Refresh Rate

By incorporating the Motion-JPEG compression format, the HSR-X Series can record images at high refresh rates so crucial moments are not missed.

- Max. 60 fields/s real-time recording and playback
- 27-level recording cycle: 60 fields/s to 1 field every 30 secs.

Recording time

HSR-X200 (80 GB HDD)

Field Recording Mode	Frame Recording Mode	Picture Quality											
		LOW		MID		HIGH		SUPER		HYPER			
Compression ratio		1/22.5		1/15.3		1/11.3		1/8.0		1/6.0			
Recording Speed (field/sec)	Recording Interval (sec)	Recording Speed (field/sec)	Recording Interval (sec)	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days
60.00	0.02	30.0	0.03	21	0.9	15	0.6	11	0.5	8	0.3	7	0.3
30.00	0.03	15.0	0.07	42	1.8	30	1.3	22	0.9	16	0.7	14	0.6
15.00	0.07	7.5	0.13	84	3.5	60	2.5	45	1.9	33	1.4	28	1.2
7.50	0.13	3.8	0.27	169	7.0	119	5.0	90	3.8	65	2.7	55	2.3
1.00	1	0.50	2	1,264	52.7	895	37.3	671	28.0	488	20.3	413	17.2
0.03	30	0.02	60	37,914	1579.8	26,855	1119.0	20,142	839.3	14,648	610.3	12,395	516.4

HSR-X200/16 (160 GB HDD)

Field Recording Mode	Frame Recording Mode	Picture Quality											
		LOW		MID		HIGH		SUPER		HYPER			
Compression ratio		1/22.5		1/15.3		1/11.3		1/8.0		1/6.0			
Recording Speed (field/sec)	Recording Interval (sec)	Recording Speed (field/sec)	Recording Interval (sec)	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days
60.00	0.02	30.0	0.03	42	1.8	30	1.3	22	0.9	16	0.7	14	0.6
30.00	0.03	15.0	0.07	84	3.5	60	2.5	45	1.9	33	1.4	28	1.2
15.00	0.07	7.5	0.13	169	7.0	119	5.0	90	3.8	65	2.7	55	2.3
7.50	0.13	3.8	0.27	337	14.0	239	10.0	179	7.5	130	5.4	110	4.6
1.00	1	0.50	2	2,528	105.3	1,790	74.6	1,343	56.0	977	40.7	826	34.4
0.03	30	0.02	60	75,827	3159.5	53,711	2238.0	40,283	1678.5	29,297	1220.7	24,790	1032.9

HSR-X216/32 (320 GB HDD)

1 Channel Input	16 Channel Input	Picture Quality											
		LOW		MID		HIGH		SUPER		HYPER			
Compression ratio		1/22.5		1/15.3		1/11.3		1/8.0		1/6.0			
Recording Speed (field/sec)	Recording Interval (sec)	Recording Speed (field/sec)	Recording Interval (sec)	Hours	Days	Hours	Days	Hours	Days	Hours	Days	Hours	Days
60.00	0.02	3.750	0.27	84	3.5	60	2.5	45	1.9	33	1.4	28	1.2
30.00	0.03	1.875	0.53	169	7.0	119	5.0	90	3.8	65	2.7	55	2.3
15.00	0.07	0.938	1.07	337	14.0	239	10.0	179	7.5	130	5.4	110	4.6
7.50	0.13	0.469	2.13	674	28.1	477	19.9	358	14.9	260	10.8	220	9.2
1.00	1	0.063	16	5,055	210.6	3,581	149.2	2,686	111.9	1,953	81.4	1,653	68.9
0.03	30	0.002	480	151,654	6318.9	107,422	4475.9	80,566	3356.9	58,594	2441.4	49,579	2065.8

These charts show only 6 levels of the 27-level recording cycle.

Audio recording can be performed in colored modes.

Condition: 1% of the HDD is set as archive area and the remaining 99% is set as normal recording area.

Built-in Multiplexing Capability (HSR-X216/32)

With the HSR-X216/32's built-in multiplexing capability, up to 16 camera images can be recorded and monitored independently. By combining the functions of a digital recorder and multiplexer into one unit, the need for an external multiplexer or switcher is eliminated. With this recorder, multiple monitoring patterns such as full screen, 4-division split screen, 9-division split screen, and 16-division split screen are available, and camera live images can be sequentially switched at intervals of 1 to 30 seconds. In addition to these four monitoring patterns, Option Screen* on the lower right corner can display a camera live image at the rate of 60 field/s for secure monitoring. Monitoring patterns in each view can be freely assigned, allowing you to create your optimum monitoring environment. (See figure A.)

* Monitoring a camera live image in Option Screen is not available when you playback images in split screens.

Multiple monitoring patterns: HSR-X216/32 only

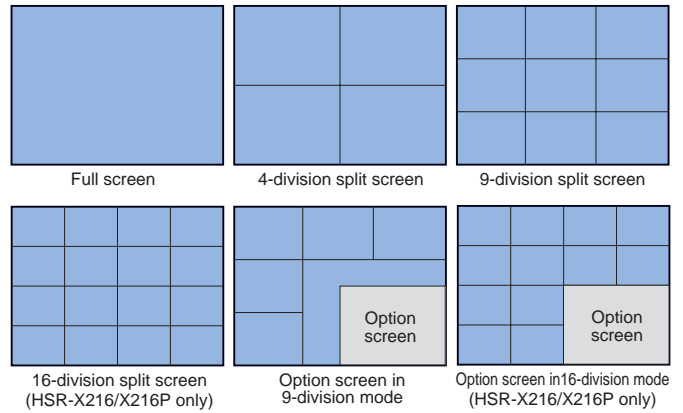
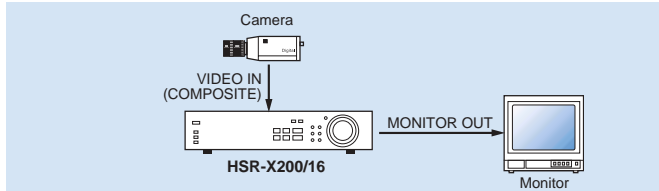


Figure A

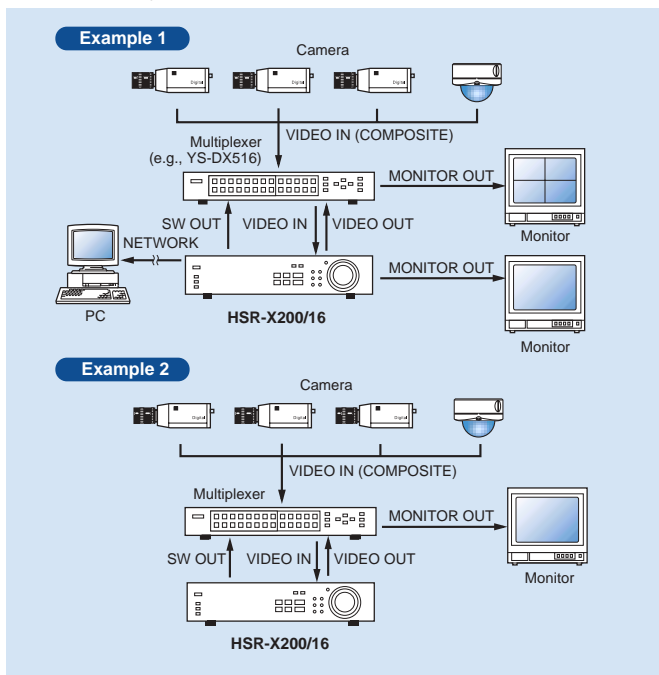
Compatible with Existing Sony Multiplexers (HSR-X200 and HSR-X200/16)

The HSR-X200 and the HSR-X200/16 recorders can easily be installed in an existing surveillance system as an alternative to analog time-lapse VCRs that are typically used with Sony multiplexers (e.g., YS-DX516 or YS-DX504).

Single camera system



Multiplexer system



Network Capability

By inserting an optional network card (10BASE-T or 100BASE-TX Ethernet)*1 into any one of the HSR-X Series of recorders, you can remotely monitor and control a surveillance system over a TCP/IP network using networked PCs running a web browser.*2 Image data can also be transferred and downloaded via a network. With the HSR-X recorders, up to four users can simultaneously monitor or view camera images.*3 There are three levels of password protection to qualify the controllable functions: one for only browsing images, one for both browsing and downloading images, and one for all controls and settings. In addition, with the HSR-X216/32, users can view quad, 3 x 3 as well as 4 x 4*4 displays via the web browser.

(See figure B.)

*1: Please contact your nearest Sony office or authorized reseller for compatible network cards.

*2: Internet Explorer 5.0 or later recommended.

*3: Ver. 1.07 or later (Main firmware) and ver. 1.02 or later (Sub firmware) are required for the HSR-X200 and HSR-X200/16.

*4: HSR-X216/32 only.



* With the HSR-X200 and HSR-X200/16 recorders, the system must be configured with Sony multiplexers (e.g., YS-DX516 or YS-DX504).

* An optional network card is required.

Figure B

Multiple Data Storage & Backup

Three Storage Areas on the HDD

The HDD of the HSR-X Series of recorders are divided into three areas – a normal recording area, an alarm recording area, and an archive area. The recording capacity for the normal recording and alarm recording areas can be freely allocated depending on your preferences, and images recorded in these areas can be copied to the archive recording area. A maximum of 9999 images can be stored in the archive recording area.

Various Backup Features

Data copied to the archive area on the HDD can be easily backed up to various media. A built-in PC card slot on the front panel of HSR-X recorders enables you to download images onto a Memory Stick media using a PC card adaptor. Furthermore, data can be backed up to DDS-2/3* or CD-R* with an optional SCSI card* via the PC card slot on the rear panel.

* Please contact your nearest Sony office or authorized dealer for compatible DDS-2/3, CD-Rs, or SCSI cards.

Comprehensive Recording & Playback Features

Pre-reverse Play (Playback-during-recording)

The Pre-reverse Play function of HSR-X recorders allows you to view previously recorded images without having to stop recording. By setting the pre-reverse time (1 to 99 minutes) on the setup menu in advance, these recorders instantly playback images at just the touch of a button while continuing to record. This feature provides outstanding operation flexibility.

Four Preset Program Recording Modes (HSR-X216/32 only)

With four types of program recording modes to choose from, the HSR-X216/32 recorder allows you the flexibility to select the preferred number of camera inputs and recording speed.* By registering a particular program recording mode, you can easily select it again. These modes can be used in conjunction with timer-recording mode or alarm recording mode.

* Program recording mode supports a maximum of 30 fields/s recording rate.

Independent Record Refresh (HSR-X216/32 only)

The HSR-X216/32 recorder provides the added benefit of allowing users to choose recording refresh rates for each input, up to maximum refresh total of 30 images/second.

Timer Recording

Timer recording can be activated on a weekly or daily basis with a maximum of eight timer settings.

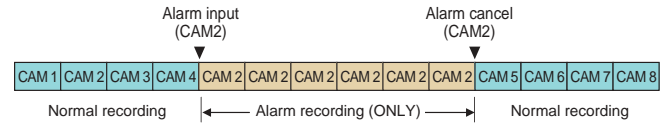
Alarm Recording

With their flexible alarm-recording settings, the HSR-X recorders provide a high level of functionality during alarm incidents. When the recorder detects an alarm internally generated by the built-in Activity Detection sensor, or an external alarm input, or both, it automatically switches to alarm recording mode.

* Alarm recording mode supports a maximum of 30 fields/s recording rate.

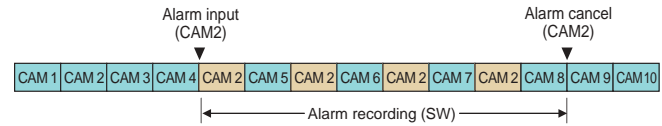
• ONLY Mode

When an alarm signal is received, the HSR-X recorders continuously record the specific camera image that detected the alarm event.



• SW Mode

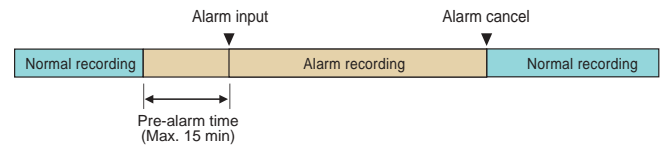
This mode prioritizes the recording cycle of the camera that detected the alarm event.



• Pre-alarm Mode

Images recorded prior to an alarm input are stored on the hard disk and can be played back when in pre-alarm mode. This mode helps to verify how alarm incidents have occurred. You can set the pre-alarm time within the range of 5 seconds to 15 minutes.

* When pre-alarm mode is set to ON, the recording rate is fixed to 15 fields/s in normal/pre-alarm recording.



Activity Detection Function

The HSR-X recorders are equipped with an activity detection sensor that is designed to recognize changes in luminance. The sensor is based on a 10 x 16 grid (HSR-X216/32) or 8 x 10 grid (HSR-X200 and HSR-X200/16) on the monitor, and ten levels of sensitivity are selectable. If a change in luminance is detected in the assigned area of the grid, an alarm is triggered. The system allows the user to set the alarm to begin recording upon activation. In addition, the HSR-X recorders have an activity detection search function that allows the user to search recorded material for scenes in which a change in luminance was detected.

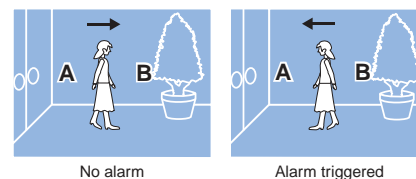
• A and B mode (HSR-X216/32 only)

The alarm is triggered when a moving object is detected at both the A point and the B point.



• B to A mode (HSR-X216/32 only)

The alarm is triggered when an object is detected moving from the B point to the A point.



Audio Single Channel Recording and Playback

One-channel audio recording and playback is available within the range of 10 to 60 fields/s.

Intelligent Search Function

The HSR-X recorders feature five types of search functions to allow you to quickly locate and review required segments: Alarm Search, Alarm Thumbnail Search, Time/Date Search, Archive Area Search and Activity Detection Search.

For example, in Alarm Search mode, data on the latest eight alarm events can be displayed on the monitor. This data includes alarm number, date, time and the corresponding camera number. In addition, a thumbnail image of a specified alarm event can be displayed in the preview zone. With the Activity Search function, users can search for activity on previously recorded images on the hard disk.

<ALARM SEARCH>				
NO	DATE	TIME	CH	TOTAL ALARMS
0108	12-20	05:37	16	0234
0107	12-19	14:23	10	
0106	12-16	16:13	06	
0105	12-16	11:13	01	
0104	12-15	10:13	03	
0103	12-13	15:16	12	
0102	12-13	11:15	10	
0101	12-13	11:13	04	

MOVE:JOG SELECT:SHUTTLE

Preview zone

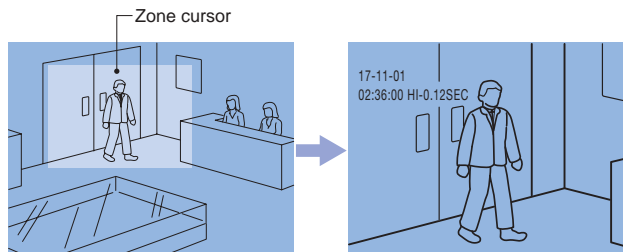
Variable Speed Picture Search

The HSR-X recorders are equipped with a "no noise" variable-speed picture search function. Simply use the jog/shuttle dial on the front panel to perform search operations.

Other Convenient Features

2x Digital Zoom

The 2x digital zoom function enlarges a specific area of an image, allowing you to check the image in greater detail.



RS-232C/RS-485 Interface

The HSR-X recorders are equipped with an RS-232C/RS-485 interface. This enables communication from the recorder to personal computers, facilitating remote monitoring, playback, status settings and parameter preset.

Series Recording (HSR-X200 and HSR-X200/16 only)

Multiple recorders can be cascaded to extend the total recording time. The series recording function allows sequential recording from deck to deck without interruption. As soon as the hard disk of one unit reaches capacity, the next unit is automatically activated.

Video Loss Alarm (HSR-X200/32 only)

A "video loss" message can be displayed on the monitor when the signal from a camera is lost during recording or monitoring, as well as when playing back recorded images.

Power-Failure Protection

In the event of a power failure, a built-in lithium battery supplies back-up power to the HSR-X recorders to retain time and setting modes in memory for up to 30 days.

Two Security Lock Levels (User/Administrator Level)

Two levels of security protection can be activated by setting passwords:

- User level for only playing back images
- Administrator level for both recording and playing back

HDD Mirroring Function

The HSR-X216/32 recorder is equipped with two built-in hard disks (160 GB x 2). The mirroring function allows the same data to be recorded on both disks. By installing an optional HSBK-X201 or HSBK-X201/16 hard disk, you can activate the same mirroring function for the HSR-X200 and HSR-X200/16.*

* The maximum HDD mirroring capacity is qualified by the capacity of the built-in HDD.

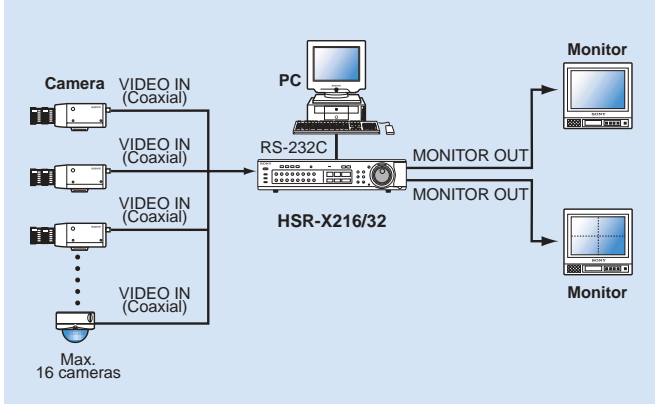
* When the HDD mirroring function is set to ON, it supports a maximum of 30 fields/s recording rate.

Various Languages

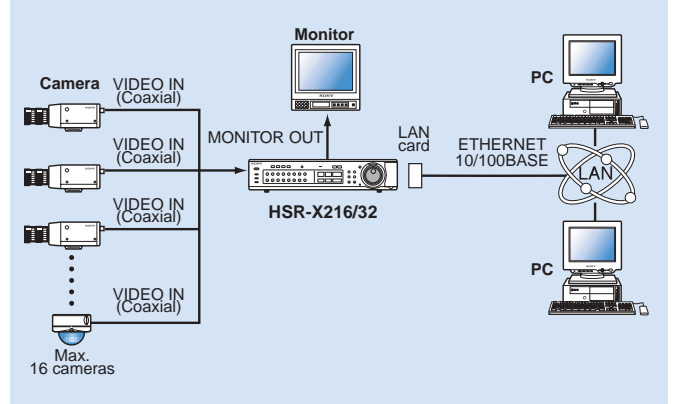
The HSR-X recorders offer English, French and Spanish language options.

System Configuration (HSR-X216/32)

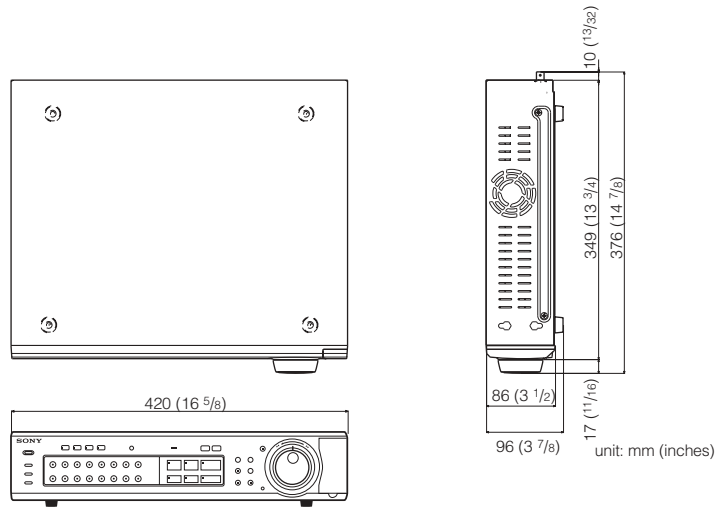
Multiple camera operation



Network operation (e.g., LAN application)



Dimensions



Panel Layout

HSR-X200 & HSR-X200/16



HSR-X216/32



Specifications

		HSR-X200	HSR-X200/16	HSR-X216/32
General	Weight	5.5 kg (12 lb 2 oz)		7.0 kg (15 lb 7 oz)
	Dimensions (W x H x D)	420 x 96 x 376 mm (16 5/8 x 3 7/8 x 14 7/8 inches)		
	Power requirements	AC 120 V ±10%, 60 Hz ±10%:		
	Power consumption	30 W		38 W
	Operating temperature	5 to 40 °C (41 to 104 °F)		
	Operating humidity	Less than 80%		
	Built-in HDD capacity with the HSBK-X201 with the HSBK-X201/16	80 or 160 GB 160 or 240 GB 240 or 320 GB	160 GB NA 240 GB	320 GB NA NA
Video	Input	1 channel, VBS, VS (BNC), 1.0 Vp-p, 75 Ω, unbalanced 1 channel, S-VIDEO (Mini DIN 4-pin) Loop-out connector: BNC (1)/S-VIDEO (1)		16 channels, VBS, VS (BNC), 1.0 Vp-p, 75 Ω, unbalanced
	Output	1 channel, VBS, VS (BNC), 1.0 Vp-p, 75 Ω, unbalanced 1 channel, S-VIDEO (Mini DIN 4-pin)		16 channels, VBS, VS (BNC), 1.0 Vp-p, 75 Ω, unbalanced
	Monitor output	—		2 channels, VBS, VS (BNC), 1.0 Vp-p, 75 Ω, unbalanced 1 channel, S-VIDEO (Mini DIN 4-pin)
	Video compression	Motion-JPEG		
	Picture quality mode	Hyper Super High Mid Low		52 KB/picture 44 KB/picture 32 KB/picture 24 KB/picture 17 KB/picture
	Picture resolution	720 x 240 pixels (Field mode) 720 x 480 pixels (Frame mode)		720 x 288 pixels (Field mode) 720 x 240 pixels (Field mode)
	Horizontal resolution	More than 500 TV lines (Hyper mode)		
	Signal-to-noise ratio	48 dB (typical, Hyper mode)		
	Audio	MIC input	1 channel Monaural (Mini jack), -60 dBs, 10 kΩ, unbalanced	
Line input		1 channel Monaural (Phono Jack), -8 dBs, 27 kΩ, unbalanced		
Line output		1 channel Monaural (Phono Jack), -8 dBs, 600 Ω, unbalanced		
Signal-to-noise ratio		40 dB (typical)		
Distortion		Less than 4% at 1 kHz		
Alarm and control input/output	RS-232C: RS-485 (A, B, GND): Alarm in: Alarm reset in: Alarm out: Non rec out: Clock set out: Clock set in: Warning out: Disk full out: Alarm full out: Remote control input: Series out: Series in: Switch out:	D-sub 9-pin Push-lock terminals Normal open (Low active) Normal open (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) Normal open (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) Push-lock terminals 5 V, 5.7 kΩ (Low active) Low level 5 V, 4.8 kΩ (Low active)	RS-232C: RS-485 (A, B): Alarm in: Sensor alarm out: R1/R2: All: Alarm out: Alarm reset out: Non rec out: Warning out: Disk full out: Alarm full out:	D-sub 9-pin RJ-11 Normal open (Low active), x16 5 V, 5.7 kΩ (Low active), x16 Push-lock terminal 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) Normal open (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active) 5 V, 5.7 kΩ (Low active)
Supplied accessories	AC power cord (1), Power cord tie (1), Rack mount kit (1), Operation manual (1)			
Optional accessories	HSBK-X201 80 GB HDD (HSR-X200 only) HSBK-X201/16 160 GB HDD (HSR-X200/16 only) MSA-8A/16A/32A/64A/128A Memory Stick MSX-256/512/1G Memory Stick PRO MSAC-PC2 Memory Stick Adaptor MSAC-PC3 Memory Stick/Memory Stick PRO Adaptor			

SONY

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