

SANYO

Digital Video Recorder with Built-in Multiplexer

- An HDD recorder with a complete multiplexer
- Horizontal resolution of 520 TV lines with 60 fields/sec simultaneous recording and playback
- Digital series connection for added storage
- Networking capability

DSR-3016

16-channel
NTSC

DSR-3009

9-channel
NTSC

DIGITAL
.....
NETWORK SOLUTIONS



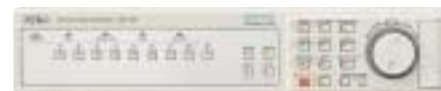


Digital Video Recorder with Built-in Multiplexer

DIGITAL
NETWORK SOLUTIONS

DSR-3016 16-channel
NTSC
DSR-3009 9-channel
NTSC

**Availability of a 160GB HDD offers greater potential.
Digital signal processing assures superb picture quality.
It is a multi-channel DVR with a multiplexer function
for different surveillance solutions.**



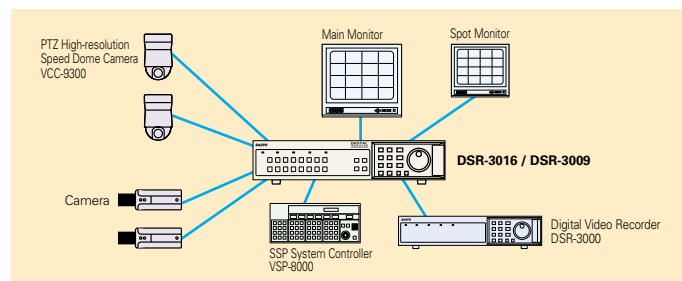
DSR-3009

▶ A Hard Disk Recorder and a Multiplexer in One Unit

DSR-3016 / DSR-3009 uses HDD to eliminate the need for replacing tapes. In addition, the built-in multiplexer eliminates a significant amount of wiring and this, along with digital signal processing, contributes to a better picture quality. Connected to other system components, the unit can be employed to make a variety of systems to satisfy different customer needs economically.

▶ The Hub of Security Systems

The capability of DSR-3016 / DSR-3009 to process digital video signals, analog video signals, and SSP (Sanyo Security Serial Protocol) makes it the hub of CCTV systems. It is a dream unit that coordinates various devices while taking advantage of the full performance capability of each device. A LAN connection with TCP/IP is also possible.



▶ Choose an 160GB or 80GB HDD

Select a 160GB HDD for a long recording time or an economical 80GB HDD, depending on the application. A 160GB HDD can store more than 6 million fields of video images — five times as many as a VHS tape (T-120) — when recording in the Normal mode using one channel. This amounts to approximately 28 hours of recording at the speed of 60 fields/sec. The unit has an expansion bay for an additional HDD, providing bigger recording capacity or, if needed, enabling the mirror recording mode. For further details about HDD expansion, contact the place of purchase.

Mirror Recording

DSR-3016 / DSR-3009 each come with one HDD unit. By adding an optional HDD of the same capacity, it is possible to record the same video on two HDDs, thus allowing for a backup.

▶ Expand Up to 960GB* with a Digital Series Connection

DSR-3016 / DSR-3009 comes with DIGITAL IN / OUT terminals that enable data transmission without conversion into analog. The terminals allow a series connection to up to two DSR-3000s, of which recording capacity is increased to 320GB each (160GB x 2) with additional HDDs, and increase maximum capacity to a stunning 960GB* for extended recording and storage. For further details about Digital Series Connection, contact the place of purchase.

* As of August 2002

▶ Three Storage Areas

There are three distinct storage areas — normal recording area, alarm area, and archive area. The user can allocate whatever amount of storage required for the normal recording area and the alarm area. Different recording settings are possible for normal and alarm recording. This makes it possible to use BASIC recording with a longer interval between shots for normal recording, but high quality recording with a shorter interval for alarm recording.

▶ Operation with Three Recording Modes

DSR-3016 / DSR-3009 has three types of recording modes: timer, pre-alarm, and post-alarm. The timer recording mode allows the user to set eight different settings. Different settings for each day of the week and multiple settings for the same day are possible. It is also possible to specify the start/stop time or use a different recording speed. The pre-alarm recording mode allows the user to save up to 15 minutes of video prior to an alarm input, which offers a great advantage in analyzing the situation. In the post-alarm recording mode, up to 15 minutes of recording after an alarm input is possible. All three recording modes may be operational simultaneously.

▶ Multiple Backup Methods Depending on Data Size CompactFlash or Microdrive

DSR-3016 / DSR-3009 comes with a CF Type II expansion slot. It allows the user to export video data to a CompactFlash or Microdrive, and provides an easy way to store data or transfer it to a PC.



CompactFlash (commercial product)



Microdrive (commercial product)

CD-R or DDS (DAT)

The unit has a built-in PCMCIA slot and, by using a PC SCSI card (recommended product only), it is possible to back up data in the archive area of the HDD on to a CD-R or DDS (DAT). In addition, images on a DDS (DAT) can be imported to the archive area.

Note: The LAN card, SCSI card, CD-R, or DDS must be the ones recommended by SANYO.

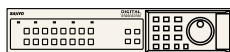


As for the recommended products, visit our website www.sanyosecurity.com or contact the place of purchase.

Horizontal Resolution

more than 520 TV Lines

Digital

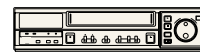


DSR-3016 / DSR-3009

Horizontal Resolution:
More than 520 TV Lines



Analog



Analog Real Time VCR

Horizontal Resolution:
More than 300 TV Lines
(standard model)

* Photos used in the comparison are conceptual ones describing the effects of the technology (comparison based on SANYO products)

Overall Picture Quality Improvement Achieved by Digital Processing

DSR-3016 / DSR-3009 uses motion JPEG compression, which has been proven to produce excellent images, in making digital recording and has achieved horizontal resolution of more than 520 TV lines as well as S/N ratio of 48 dB or better. A 170% improvement in picture quality is possible, compared to conventional analog VCR*. The new processing method is also effective in resolving problems associated with analog recording, such as smudges, vertical drift, and jitters, and provides clear surveillance pictures. * SANYO standard model

Simultaneous Recording and Playback at 60 fields/sec

SANYO's expertise in the field has made it possible to record and playback simultaneously at a maximum speed of 60 fields/sec.

Five Different Picture Qualities and 27 Recording Speeds Enable Flexible Settings

The picture quality is selectable from BASIC, NORMAL, ENHANCED, FINE, and SUPER FINE. Together with the 27 different recording speeds, the user can select the most suitable recording mode for each situation.

Audio Recording Available

Audio recording is available for recording speeds from 60 fields/sec to 10 fields/sec.

(Audio input must be a single channel.)

DSR-3016 / DSR-3009 Recording Time

1ch recording with HDD 80GB

Recording Speed		Picture Quality					Audio Recording
fields/sec	Recording Interval (sec.)	Basic	Normal VHS (EP)	Enhanced VHS (SP)	Fine S-VHS	Super Fine S-VHS +	
Recording Time (unit: hour)							
60.00	0.017	20	14	10	7	6	Available
30.00	0.033	40	28	21	15	13	
20.00	0.050	61	43	32	23	20	
15.00	0.067	81	57	43	31	26	
10.00	0.100	122	86	65	47	40	
7.50	0.133	163	115	86	63	53	
6.00	0.167	204	144	108	78	66	
5.00	0.200	245	173	130	94	80	
4.29	0.233	285	202	151	110	93	
3.75	0.267	326	231	173	126	106	
3.33	0.300	367	260	195	142	120	Not available
3.00	0.333	408	289	217	157	133	
2.73	0.367	449	318	238	173	146	
2.31	0.433	531	376	282	205	173	
2.00	0.500	612	434	325	236	200	
1.67	0.600	735	520	390	284	240	
1.43	0.700	857	607	455	331	280	
1.25	0.800	980	694	520	378	320	
1.11	0.900	1,102	781	585	426	360	
1.00	1	1,225	868	651	473	400	
0.50	2	2,450	1,736	1,302	946	801	
0.33	3	3,676	2,604	1,953	1,420	1,201	
0.25	4	4,901	3,472	2,604	1,893	1,602	
0.20	5	6,127	4,340	3,255	2,367	2,003	
0.10	10	12,254	8,680	6,510	4,734	4,006	
0.05	20	24,509	17,361	13,020	9,469	8,012	
0.03	30	36,764	26,041	19,531	14,204	12,019	

* The recording time may vary slightly depending on the complexity of the images and the presence of an audio signal.

* The table above lists the picture quality vs. recording time for a field recording using the normal recording area of the 80 GB HDD, using the default settings. The recording time will change depending on the settings for the storage area, the use of frame recording, and adding the availability of an optional HDD. Contact the place of purchase for details on increasing the capacity by adding a HDD.

Reference: 24H = 1 day, 168H = 1 week, 720H = 1 month, 8760H = 1 year

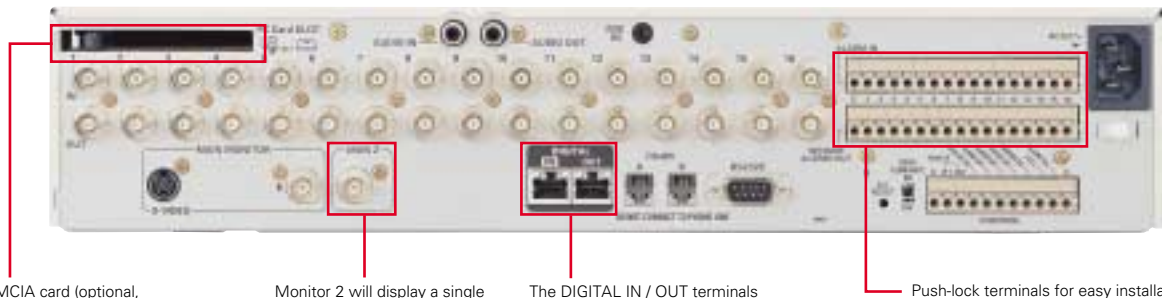
DSR-3016 / DSR-3009 Recording Time

1ch recording with HDD 160GB

Recording Speed		Picture Quality					Audio Recording
fields/sec	Recording Interval (sec.)	Basic	Normal VHS (EP)	Enhanced VHS (SP)	Fine S-VHS	Super Fine S-VHS +	
Recording Time (unit: hour)							
60.00	0.017	40	28	21	15	13	Available
30.00	0.033	81	57	43	31	26	
20.00	0.050	122	86	65	47	40	
15.00	0.067	163	115	86	63	53	
10.00	0.100	245	173	130	94	80	
7.50	0.133	326	231	173	126	106	
6.00	0.167	408	289	217	157	133	
5.00	0.200	490	347	260	189	160	
4.29	0.233	571	405	303	220	186	
3.75	0.267	653	462	347	252	213	
3.33	0.300	735	520	390	284	240	Not available
3.00	0.333	816	578	434	315	267	
2.73	0.367	898	636	477	347	293	
2.31	0.433	1,062	752	564	410	347	
2.00	0.500	1,225	868	651	473	400	
1.67	0.600	1,470	1,041	781	568	480	
1.43	0.700	1,715	1,215	911	662	560	
1.25	0.800	1,960	13,88	1,041	757	641	
1.11	0.900	2,205	1,562	1,171	852	721	
1.00	1	2,450	1,736	1,302	946	801	
0.50	2	4,901	3,472	2,604	1,893	1,602	
0.33	3	7,352	5,208	3,906	2,840	2,403	
0.25	4	9,803	6,944	5,208	3,787	3,205	
0.20	5	12,254	8,680	6,510	4,734	4,006	
0.10	10	24,509	17,361	13,020	9,469	8,012	
0.05	20	49,019	34,722	26,041	18,939	16,025	
0.03	30	73,529	52,083	39,062	28,409	24,038	

* The recording time may vary slightly depending on the complexity of the images and the presence of an audio signal.

* The table above lists the picture quality vs. recording time for a field recording using the normal recording area of the 160 GB HDD, using the default settings. The recording time will change depending on the settings for the storage area, the use of frame recording, and adding the availability of an optional HDD. Contact the place of purchase for details on increasing the capacity by adding a HDD.



Using a PCMCIA card (optional, recommended product only), a LAN connection (Ethernet 10Base-T) is possible. For data backup to a DDS (DAT) or a CD-R, use a SCSI card.

Monitor 2 will display a single camera image and, in case of an alarm, the alarm screen.

The DIGITAL IN / OUT terminals allow a series connection to two other DSR-3000s maximum.

Push-lock terminals for easy installation

Five Different Search Functions

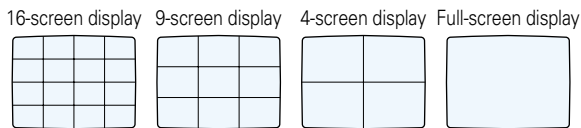
DSR-3016 / DSR-3009 features five different search functions — Day/Time Search, Alarm Search, Alarm Thumbnail Search, Archive Area Search, and Motion Detection Search. Since all data is recorded on a hard-disk drive, the target image is brought up instantly despite the disk's ability to store a large amount of data. This eliminates the time wasted on winding/rewinding tapes on a conventional time-lapse VCR. In addition, with the digital recording technology, the user can view a noise-free picture in a fast-forward or fast-rewind search.

Duplex Recording with 1-Field Switching

DSR-3016 / DSR-3009 can record multiple camera images with 1-field switching for high-density recording.

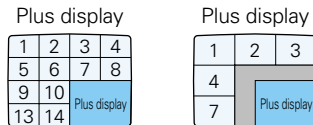
Extensive Display Options

For both live picture monitoring (during multiplex recording) and replay of pictures, the user can select from 16-screen display, 9-screen display, 4-screen display, and full-screen (1-screen) display.



The maximum number of cameras for DSR-3009 is nine.

• **Plus display:** Pressing on the Plus Display button in 16- or 9-screen display mode will bring up a plus display screen on the lower right corner occupying 1/4 of the screen. The plus display screen is capable of displaying a live video image at a speed of 60 fields/sec for better surveillance. The user may select any one of the sixteen camera images or a sequential display of all camera images for the plus display screen.



The maximum number of cameras for DSR-3009 is nine.

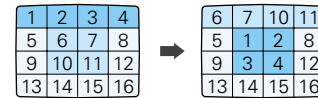
• **Playback during Live Surveillance:** During live surveillance, the user can review a recorded video by displaying it on the plus display screen. This function allows you to take advantage of simultaneous recording and playback using only one monitor, when recording with digital video recorder DSR-3016 / DSR-3009.

• **4-screen display:** Each of the four display areas may be set to display any camera image or series of camera images sequentially (switching interval 1-30 seconds.)

• **Full-screen display:** The entire screen may be set to display any camera image or series of camera images sequentially (switching interval 1-30 seconds, independently set for each camera). Full-screen display can both zoom to x2 and viewed as still images. (Available on live pictures and recorded pictures)

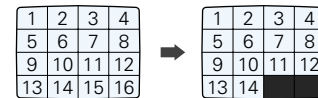
• **Screen position assignment:** Each camera image can be assigned to any location on the screen in 16-screen and 9-screen display mode. For example, images from critical security points can be placed in the center without any re-wiring. You can also assign images in 4-screen display mode. (DSR-3009's display option is up to 9-screen.)

Example: Pictures #1, #2, #3 and #4 are replaced by #6, #7, #10 and #11



• **Monitor masking:** It is possible to hide particular pictures (such as ones from hidden cameras) on the monitor. This setting does not affect multiplex recording, in which all camera images are recorded.

Example: Pictures #15 and #16 are masked

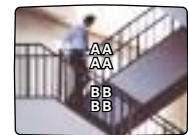


Built-in Motion Sensor

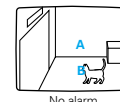
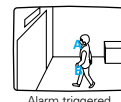
DSR-3016 / DSR-3009 comes with a built-in motion sensor. Different settings can be made for each camera image independently. The sensor can detect moving objects within the screen by picking up changes in brightness. The user can use this feature to trigger an alarm recording.

Five detection modes are available for each camera image as follows:

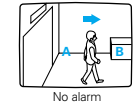
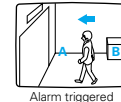
- **MODE A:** Alarm is triggered by a brightness change on sensor A
- **MODE A AND B:** Alarm is triggered by simultaneous brightness change on both sensors A and B. (Disregard movement of small objects such as small animals.)
- **MODE A AND NB:** Alarm is triggered when there is a brightness change on sensor A but not on sensor B. (Disregard brightness changes in the whole area due to lighting conditions.)
- **MODE B TO A:** Alarm is triggered when there is a change in brightness in the direction of sensor A to sensor B.
- **MODE C:** Alarm is triggered when there is a constant change in brightness for the entire screen. (Detects the spraying of paint, etc., on the camera.)



Example MODE A AND B
Disregard movements of small objects



Example MODE B TO A
Detecting objects moving from B to A



Alarm Functions

Using the built-in motion sensor and external sensors, the following alarm functions are available.

(1) Monitor Display Switching

An alarm signal causes the monitor to switch to the designated mode of display (16-, 9-, or full-screen). It also causes letters "SA" (for a video alarm) or "EA" (for an external alarm) to be displayed alternately with the camera title. The user can also set each spot monitor to switch to the image from the camera from which the alarm was triggered.

(2) Buzzer and Indicator Lamp Warnings

An alarm signal triggers a buzzer sound as well as the blinking of the camera selection indicator light for the relevant camera.

Alarm Recording

Arbitrary settings for picture quality, recording speed, and audio recording are possible. Alarm recording is triggered by an alarm signal from the built-in motion sensor or an external sensor. There are two operating modes in alarm recording — alternate recording and continuous recording.

SW 1 (alternate recording)



ONLY 2 (continuous recording)



Programmed Recording

For each of four available programs (P1 to P4), the user can specify particular cameras for recording. In addition, different recording speeds can be set for each program. These programs can also be used when making a timer recording or a pre-alarm recording.

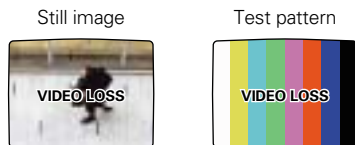
Timer Functions

By dividing a day into four time periods T1, T2, and T3, you can set up an independent setting in each time period, for each of the following functions.

- (1) Programmed Recording
- (2) Monitor Masking
- (3) Display Interval for Full-screen Sequential Display

Video loss alarm

When a video signal is lost due to accident or fire, a buzzer notifies the user. The monitor display freezes with a still image of the most recently received image or switches to a test pattern, along with a blinking display of "VIDEO LOSS" sign.



Networking with LAN

With the PCMCIA slot, remote control over a LAN connection is possible. Using Internet Explorer Version 5.0 or later, the user can use the set-up menu of the recorder, or start / stop recording or playback from a PC over a TCP/IP connection without the need for any tailor-made software.



Playback images

SSP Compatible

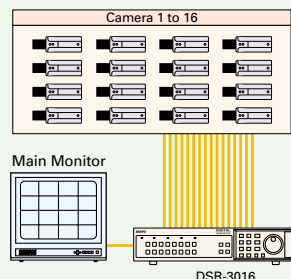
DSR-3016 / DSR-3009 is compatible with SSP (Sanyo Security Serial Protocol) signal, the bi-directional communication protocol for security equipment proposed by Sanyo. By using SSP, it is possible to control cameras, recorders, and other peripheral devices (up to 255 units in total) from a single controller.

- Two-level password security lock (admin / user)
- 30-day memory back-up
- Resume function
- End-of-medium alarm
- On-screen mode setting, menu languages built in: English / French / Spanish
- Built-in time date generator
- Timer recording
- Auto repeat recording
- Alarm recording
- Alarm counter
- Jog Shuttle
- Forward / reverse field advance
- Automatic daylight savings time adjustment
- Lifetime counter
- Through output of video
- Position adjustable camera titles (10-character)
- One push adjustable clock
- RS-232C compatible
- Push-lock terminals for easy installation (refer to the rear panel photo)

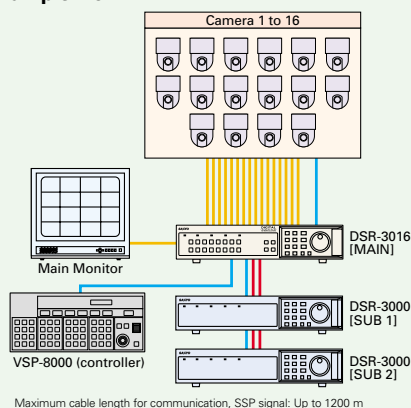
System Example

— Analog video signal — Digital signal — SSP signal

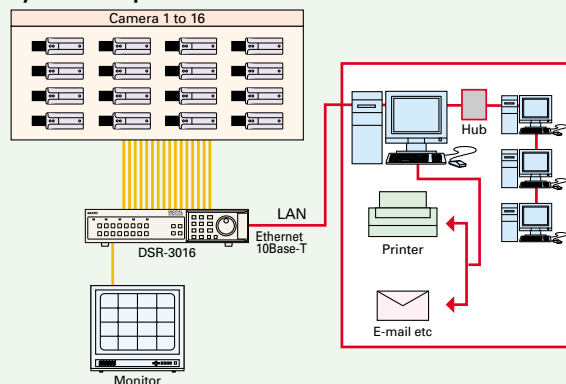
System Example No.1



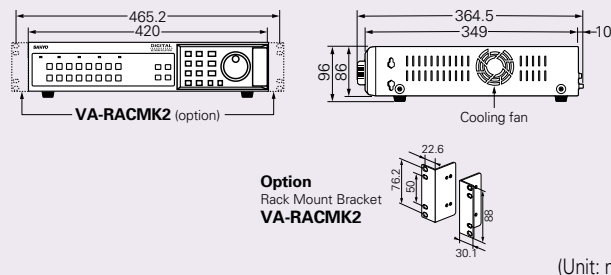
System Example No.2



System Example No.3



DSR-3016/DSR-3009



(Unit: mm)

MODEL	DSR-3016	DSR-3009
General		
Hard disk Capacity	80 GB or 160 GB (One HDD can be added.)	
Picture resolution	720 x 240 (Field)	
Compression	M-JPEG	
Picture quality	5 levels (Basic, Normal, Enhanced, Fine, Super Fine)	
Recording type	Field recording	
Recording speed	27 levels.	
Recording Area	Normal Recording Area / Alarm Recording Area / Archive Area	
Number of cameras	16	9
Menu language	English / French / Spanish	
Clock setup	Date, month, year, hour, minute, second	
Search Mode		
Time/Date Search	Search by time and date	
Alarm Search	Search by alarm event list	
Alarm Thumbnail Search	Search by alarm event thumbnails	
Archive Area Search	Search Archive Area with event list	
Smart motion search	Search by specifying a motion sensor	
Video		
Signal format	NTSC standard (color) / EIA standard (B/W) auto select, 525 lines, 60 fields/sec	
Video input	Mini-DIN 4-pin x 1 (S-VIDEO) / BNC x 16	Mini-DIN 4-pin x 1 (S-VIDEO) / BNC x 9
Video output	Mini-DIN 4-pin x 1 (S-VIDEO) / BNC x 16	Mini-DIN 4-pin x 1 (S-VIDEO) / BNC x 9
Digital transport in	RJ-45 x 1	
Digital transport out	RJ-45 x 1	
Audio		
Audio input	-8 dBs 27 kohms unbalanced, RCA x 1	
Audio output	-8 dBs 600 ohms unbalanced, RCA x 1	
Microphone input	-60 dBs 10 kohms unbalanced, 3.5 mm mini jack x 1	
Interface		
CompactFlash slot	CF type 2	
PC card slot	PCMCIA type 2 for SCSI or Ethernet card	
Control signal		
RS-232C	D-SUB 9-pin (for PC)	
RS-485	RJ-11 x 2, Push-lock terminal x 1(GND)	
Remote Control in	Push-lock terminal x 2, Push-lock terminal x 1(GND)	
Alarm in	Push-lock terminal x 16 / (Normal Open Low level active)	Push-lock terminal x 9 / (Normal Open Low level active)
Alarm out	Push-lock terminal x 16 / (Normal 0 V High (5 V) level active)	Push-lock terminal x 9 / (Normal 0 V High (5 V) level active)
Alarm reset	1 input (Normal Open Low level active)	
NON Rec out	1 input (Normal 0 V High (5 V) level active)	
Clock set out	1 output (Normal 5 V Low level active)	
Warning out	1 output (Normal 0 V High (5 V) level active)	
Disk full out	1 output (Normal 0 V High (5 V) level active)	
Alarm full out	1 output (Normal 0 V High (5 V) level active)	
Electrical		
Power source	120 V AC, 60 Hz	
Power consumption	38 W 560 mA	37 W 540 mA
Operating conditions	Temperature: 5°C to 40°C [41°F to 104°F], Humidity: 80% or less	
Physical		
Dimensions (W x H x D)	420 x 86 x 364.5 mm	
Weight (Approx.)	6.3 kg [13.9 lbs.]	6.2 kg [13.7 lbs.]

*Specifications subject to change without notice

Warnings regarding HDDs

- Do not attempt to install or replace a HDD on your own. You cannot use these HDDs on PCs.
- The unit may be damaged if it is exposed to an impact or vibration, or the power plug is disconnected during operation.
- Sanyo will not be held liable for any data loss due to an HDD error or a failure during recording.

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***Caution:** please consult the instruction manual to ensure safe and proper operation of the product.

Distributed by:

Horizontal resolution 520 TV Line compatible devices

Camera



1/3" Color CCD DSP High-resolution Camera
VCC-6574A



1/3" CCD DSP High-resolution Day/Night Camera (Color + B/W)
VCC-4594



1/3" Color CCD DSP High-resolution Camera
VCC-6594



1/4" Color CCD DSP High-resolution Zoom Camera
VCC-ZM300 **New**



1/4" Color CCD DSP High-resolution Speed Dome Camera
VCC-9300 **New**

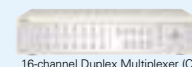
Multiplexer



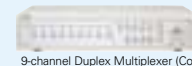
16-channel Digital Transport Multiplexer (Color)
MPX-CD163 **New**



9-channel Digital Transport Multiplexer (Color)
MPX-CD93 **New**



16-channel Duplex Multiplexer (Color)
MPX-CD162



9-channel Duplex Multiplexer (Color)
MPX-CD92

Recorder



Digital Video Recorder
DSR-3000 **New**



Digital Real Time VCR
DTL-4800

Monitor



19" High-resolution Color Video Monitor
VMC-8618



14" High-resolution Color Video Monitor
VMC-8613

SSP compatible devices

SSP System Unit

SSP System Controller

VSP-8000 **New**



SSP Signal Converter

VSP-CB10 **New**



Camera

1/4" Color CCD DSP High-resolution Speed Dome Camera
VCC-9300 **New**



1/4" Color CCD DSP High-resolution Zoom Camera
VCC-ZM300 **New**



Recorder

Digital Video Recorder

DSR-3000 **New**

Digital Real Time VCR

DTL-4800

960-hour Recording + Real Time VCR
*The optional VZU-485/232C board is required

SRT-8960 **New**

168-hour Recording + Real Time VCR
*The optional VZU-485/232C board is required

SRT-8168 **New**

40-hour Recording + Real Time VCR
*The optional VZU-485 board is required

SRT-8040 **New**

40-hour Recording Real Time VCR
The optional VZU-485 board is required

SRT-2400

40-hour Recording Real Time VCR
The optional VZU-485 board is required

SRT-2400DC

8-hour Recording Real Time VCR

SRC-850

960-hour Recording Time Lapse VCR

TLS-9960

Multiplexer

16-channel Digital Transport Multiplexer (Color)
MPX-CD163 **New**

16-channel Duplex Multiplexer (Color)
MPX-CD162

16-channel Duplex Multiplexer (B/W)
MPX-MD162

9-channel Digital Transport Multiplexer (Color)
MPX-CD93 **New**

9-channel Duplex Multiplexer (Color)
MPX-CD92

9-channel Duplex Multiplexer (B/W)
MPX-MD92

Network Products

Network Video Server

VSP-SV2000 **New**

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SANYO

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