SANYO

Digital Video Recorder with Built-in Multiplexer

- An HDD recorder with a complete 16 / 9-ch multiplexer
- A clear picture with horizontal resolution of more than 520 TV lines
- Simultaneous recording and playback at 60 fields/sec.
- Live picture monitoring at 480 (30 x 16) FPS and 270 (30 x 9) FPS for DSR-3716 and DSR-3709 respectively
- Camera telemetry control
- Networking capability

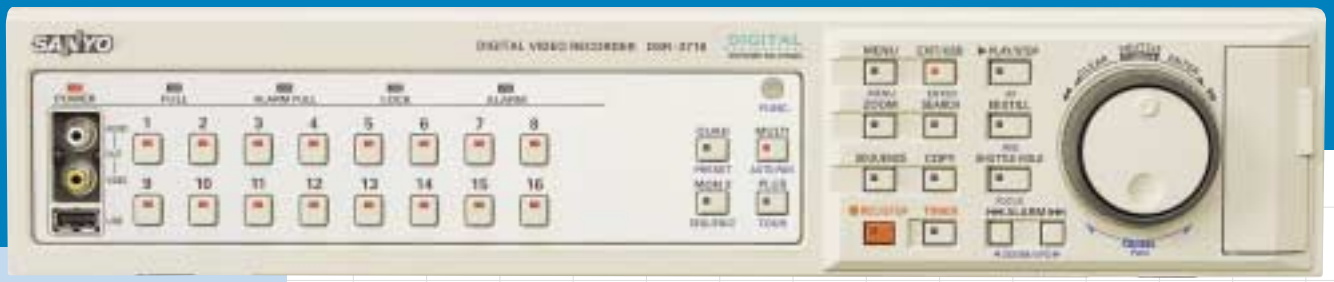
DSR-3716 16-channel NTSC
DSR-3709 9-channel NTSC

DIGITAL NETWORK SOLUTIONS

Made in Japan

The product introduced here is manufactured in Japan utilizing advanced technologies and quality control.

Digital Video Recorder with Built-in Multiplexer



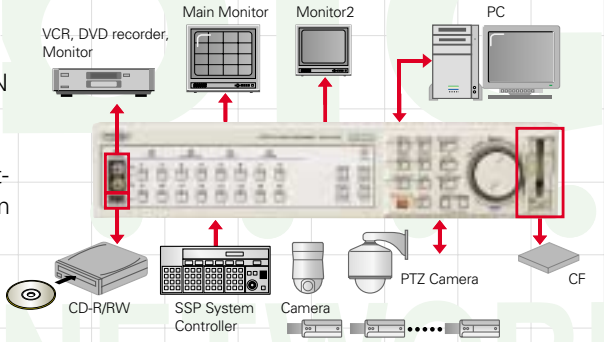
DSR-3716

Simultaneous recording/playback with high picture quality of more than 520 TV lines at 60 fields/sec, plus availability of large 300 GB HDD. Multiple screen display that is updated at 480FPS*. Also features built-in LAN terminal to add controls over a network.

***DSR-3716**

An All-in-one Unit for a System Hub

Capable of processing analog signals, SSP signals and network signals (through the LAN terminal), the DSR-3716 / DSR-3709 functions as a system hub that connects different devices such as cameras and monitors. It offers added benefits of 520 TVL high picture quality, real time (30 FPS/channel) multiple screen monitoring, and USB terminals to output data to a CD-R/RW disc. The units also include a telemetry function that allows them to control cameras that support SSP via a coaxial cable. These brand new units cover all aspects of the expanded needs of surveillance equipment.



More than 520 TV Lines Real time multiple screen monitoring

High Picture Quality of 520 TV Line Horizontal Resolution

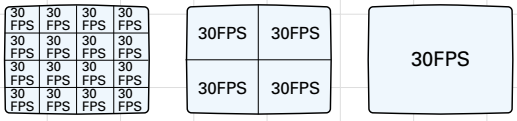
The DSR-3716 / DSR-3709 supports simultaneous recording / playback in the Motion-JPEG video compression standard, a recording good enough for establishing cases against offenders. Naturally, the recording is free from smudges, vertical shifts, and jitters. With a horizontal resolution of more than 520 TV lines and an S/N ratio of more than 50dB, the surveillance video recording is clearer than ever.

Simultaneous Recording and Playback at 60 fields/sec

The simultaneous recording and playback function makes it possible for the user to review recorded images without interrupting the recording in progress.

Full-motion, Multiple Screen Display of Live Video Images

Multiple live video images can be viewed simultaneously in 16, 9, or 4 split-screen display at the speed of 30 FPS/channel. Full screen display is also available. Select the desired display mode without worrying about the update speed.



Audio Recording Available

Audio recording is available for recording speeds from 60 fields/sec to 1 field/sec. (Audio input must be a single channel.)

HDD Lineup from 80 GB to 300 GB

The unit accommodates up to 300 GB HDD. Depending on the needs, 80 GB or 160 GB HDD's* may also be selected. With two 300 GB HDD's installed, it offers 156 hours of non-stop recording at the speed of 60 fields/sec. Having two HDD bays makes it possible to extend the recording time or set up mirroring** to backup data. For further details about HDD expansion, contact the place of purchase.

* As of December 2004

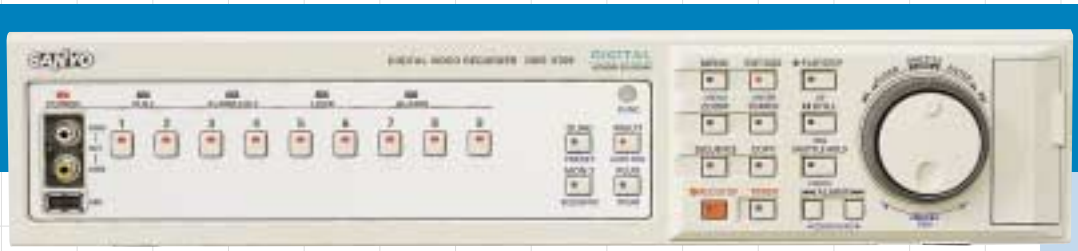
**Mirror Recording
DSR-3716 / DSR-3709 both come with two HDD bays. With two HDD's of the same capacity installed, it is possible to record the same video on both of them, thus allowing for a backup.

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.

Five Different Search Functions

DSR-3716 / DSR-3709 features five different search functions — Time/Date Search, Alarm Search, Alarm Thumbnail Search, Archive Area Search and Motion Detection Search. Since all data is recorded on an HDD, the target image is brought up instantly despite a large amount of data capable of being stored on the disc.



DSR-3709

A DVR with Superior System Expansion Capability Supporting Various Media and Network Connections

Camera Telemetry Control

The buttons on the DSR-3716 / DSR-3709 front panel allow the user to control PTZ cameras and zoom cameras. The unit transmits SSP* signals by overlaying them on to the video signal through a coaxial cable. This makes it possible to control cameras that support coaxial SSP transmission without any additional device other than a video cable, not only from the front panel, but also from a SANYO controller or via a network. In addition, PELCO and BBV products can also be controlled if they support coaxial signal transmission.

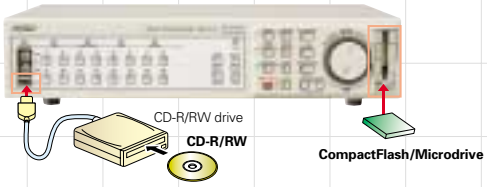
* SSP (SANYO Security Serial Protocol) is a communication protocol for security devices proposed by SANYO.

Camera control (PTZ cameras & zoom cameras only) available from the front panel

AV Output Terminal on the Front Panel

These terminal can be used for supplying signals to a consumer VCR or DVD recorder, thus enabling the use of analog video tapes and DVDs as recording media. When a TV monitor is connected, the same video image as the main monitor can be displayed, including the menu screen.

Multiple Backup Methods Depending on Data Size



CD-R/RW

The unit comes with two USB terminals located both on the front and rear panels. Using one of these terminals, it is possible to back up data in the HDD archiving area to CD-R/RW discs. The use of discs assures secure storage of necessary video and audio data.

Use recommended CD-R/RW drive only.

CompactFlash or Microdrive

DSR-3716 / DSR-3709 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. Downloading and uploading of setup menus by use of a CF card offer an easy option for setting up additional DSR-3716 / DSR-3709 recorders.

Print Directly from a CF Card or a Microdrive

By using SANYO digital photo printer DVP-P1, it is possible to print images directly from a CF card or a Microdrive.

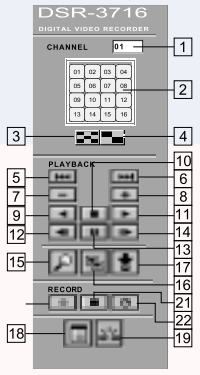
(The use of other printers may not generate the best results.)

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

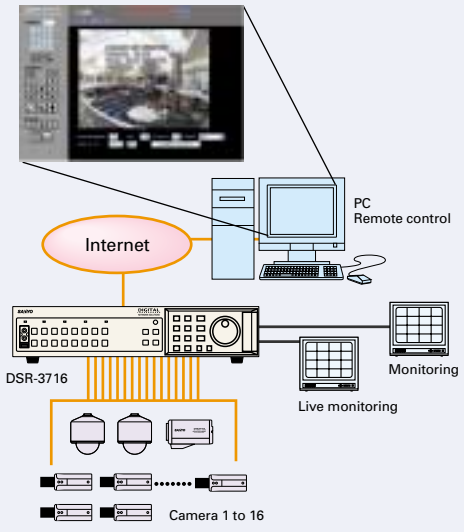
Networking Capability

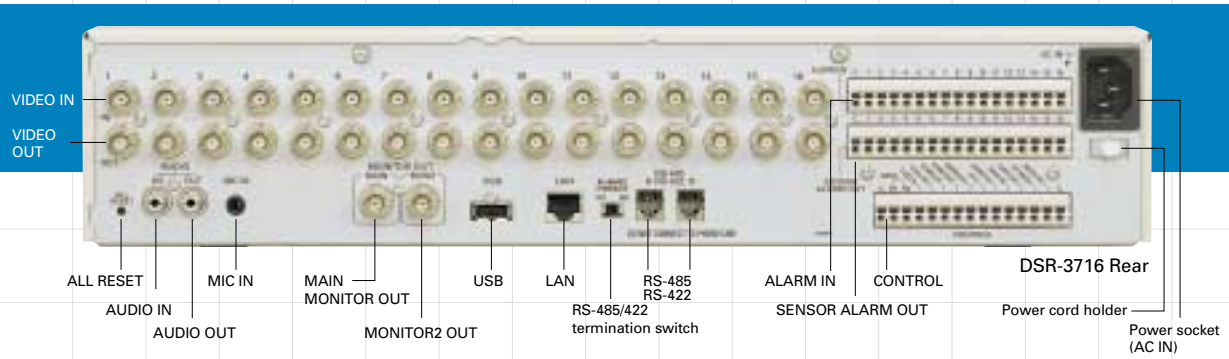
Remote Control by a PC

The built-in LAN terminal enables remote control of the DSR-3716 / DSR-3709 through a PC that is connected to the network, by using Internet Explorer Version 5.5 or higher without the need for any special software. It is also possible to monitor the live video, play back recorded pictures, control cameras, and download video/audio recordings to the PC. Added security is provided by limiting the access level depending on the user and password setup.



1. Channel number
2. Channel selection (ID1/2/3)
3. MULTIVIEW (ID1/2/3)
4. QUAD (ID1/2/3)
5. Previous event (ID2/3)
6. Next event (ID2/3)
7. Speed down (ID2/3)
8. Speed up (ID2/3)
9. Reverse playback (ID2/3)
10. Playback stop (ID2/3)
11. Playback (ID2/3)
12. Previous image (ID2/3)
13. Still (ID2/3)
14. Next image (ID2/3)
15. Search (ID2/3)
16. Copy (ID2/3)
17. Download (ID2/3)
18. Menu settings (ID3)
19. Disconnect (ID1/2/3)
20. Record (ID3)
21. Record STOP (ID3)
22. Timer (ID3)



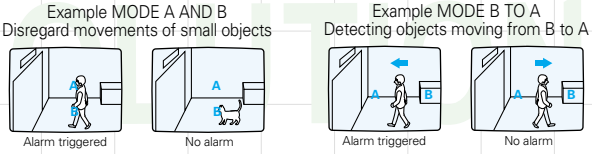


Series Connection

DSR-3716 / DSR-3709 facilitates channel by channel series connection between multiple units through the connection of each channel's VIDEO IN/OUT terminals along with the connection of the SERIES IN/OUT terminals. When the master DVR runs out of storage capacity, recording automatically switches to the second DVR and onward to enable unlimited expansion of storage capacity and recording time.

Built-in Motion Sensor

DSR-3716 / DSR-3709 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.



300 GB DSR-3716/DSR-3709 Recording Time (100%-usage)

Recording Speed		Picture Quality					Audio Recording
fields/sec	Recording Interval (sec.)	Basic 15kB	Normal 22kB VHS (EP)	Enhanced 30kB VHS (SP)	Fine 42kB S-VHS	Super Fine 50kB S-VHS +	
		Recording Time (unit: hour)					
60.00	0.017	78	55	41	30	25	Available
30.00	0.033	156	110	83	60	51	
20.00	0.050	234	166	124	90	76	
15.00	0.067	313	221	166	120	102	
10.00	0.100	469	332	249	181	153	
7.50	0.133	626	443	332	241	204	
6.00	0.167	782	554	415	302	255	
5.00	0.200	939	665	498	362	307	
4.29	0.233	1,095	776	582	423	358	
3.75	0.267	1,252	886	665	483	409	
3.33	0.300	1,408	997	748	544	460	
3.00	0.333	1,565	1,108	831	604	511	
2.73	0.367	1,721	1,219	914	665	562	
2.31	0.433	2,034	1,441	1,080	786	665	
2.00	0.500	2,347	1,663	1,247	907	767	
1.67	0.600	2,817	1,995	1,496	1,088	921	
1.43	0.700	3,286	2,328	1,746	1,269	1,074	
1.25	0.800	3,756	2,660	1,995	1,451	1,228	
1.11	0.900	4,226	2,993	2,245	1,632	1,381	
1.00	1	4,695	3,326	2,494	1,814	1,535	
0.50	2	9,391	6,652	4,989	3,628	3,070	Not available
0.33	3	14,087	9,978	7,483	5,442	4,605	
0.25	4	18,782	13,304	9,978	7,256	6,140	
0.20	5	23,478	16,630	12,472	9,071	7,675	
0.10	10	46,956	33,261	24,945	18,142	15,351	
0.05	20	93,913	66,522	49,891	36,284	30,702	
0.03	30	140,870	99,783	74,837	54,427	46,053	

* 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 field recording using the normal recording area of the 300 GB HD. The recording time will change depending on the settings for the storage area, the use of frame recording, and the availability of an optional HDD. Contact the place of purchase for details on increasing the capacity by adding a HDD.

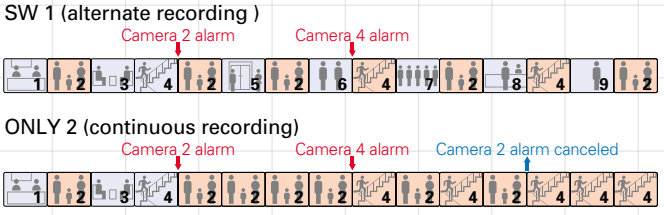
Reference: 24H = 1 day, 168H = 1 week, 720H = 1 month, 8760H = 1 year

Three Recording Modes for Flawless Recording

DSR-3716 / DSR-3709 has three recording modes; Alarm, Timer, and Program. The three modes can operate individually or in any combination.

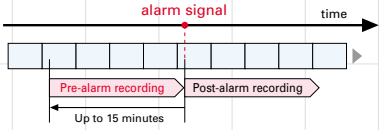
Alarm Recording

A full range of 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.



Pre-alarm Recording

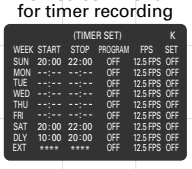
The pre-alarm recording mode allows the user to save up to 15 minutes of video prior to an alarm input, offering a great advantage when analysing the situation.



Timer Recording

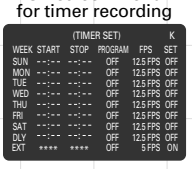
The timer recording mode allows the user to set eight different settings. Different settings for each day of the week and multiple settings for the same day are possible. It is also possible to specify the start / stop time or use a different recording speed.

On-screen menu for timer recording



Example: From Monday to Friday, recordings are made from 10:00 to 20:00 at the same speed and according to the timer setting, while recordings for Saturday and Sunday are made from 10:00 to 22:00 in the same mode.

On-screen menu for timer recording



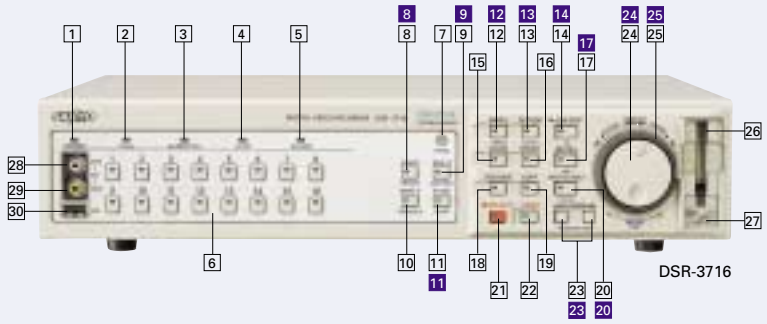
The input signal to the external timer input terminal on the rear panel can be used to start or stop recording. Combination with ordinary timer is also possible.

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.

LOCATIONS OF CONTROLS AND INDICATORS

1. POWER indicator
2. FULL indicator
3. ALARM FULL indicator
4. LOCK indicator
5. ALARM indicator
6. [CAMERA SELECT] button and indicators
7. [FUNC.] button
8. [QUAD] button / [PRESET]
9. [MULTI] button / [AUTO PAN]
10. [MON2] button / [SEQUENCE]
11. [PLUS] button / [TOUR]
12. [MENU] button / [MENU]
13. [EXIT/OSD] button / [ENTER]
14. [PLAY/STOP] button / [AF]
15. [ZOOM] button
16. [SEARCH] button
17. [STILL] button / [IRIS]
18. [SEQUENCE] button
19. [COPY] button
20. [SHUTTLE HOLD] button / [FOCUS]
21. [REC/STOP] button
22. [TIMER] button
23. [ALARM] button / [ZOOM/INFO]
24. Jog dial (inside) / [TILT]
25. Shuttle dial (outside) / [PAN]
26. CompactFlash card slot
27. [MENU RESET] button
28. Audio output terminal
29. Video output terminal
30. USB terminal



Alarm Functions

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

(1) Monitor Display Switching

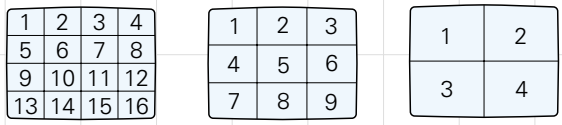
An alarm signal forces the monitor to switch to the designated mode of display (16-, 9-, 4-, or full-screen). It also causes letters "SA" (for a sensor alarm) or "EA" (for an external alarm) to be displayed alternately with the camera title. The user can also set each spot monitor to switch to the image from the camera from which the alarm was triggered.

(2) Buzzer and Indicator Lamp Warnings

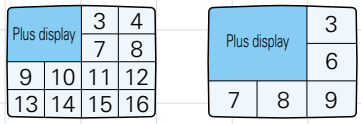
An alarm signal triggers a buzzer sound as well as the blinking of the camera selection indicator light for the relevant camera.

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.



• 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.



- 4-screen display
- Full-screen display
- Screen position assignment
- Monitor masking

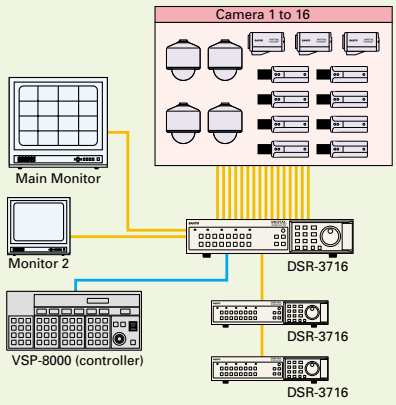
Other Features

- Duplex recording with 1-field switching
- Two-level password security lock (admin / user)
- Video loss alarm
- 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
- Auto repeat recording
- Alarm counter
- Auto delete
- 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
- Push-lock terminals for easy installation

System Example

Analog video signal
SSP signal
LAN

System Example No.1



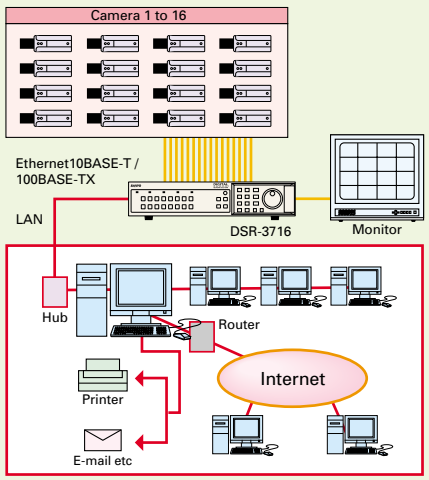
Maximum cable length for communication, SSP signal: Up to 1200 m (3947ft)

SSP coaxial camera control compatible

Zoom
1/4" color CCD DSP
High-resolution AF Zoom Camera
VCC-ZM400 DAY NIGHT
VCC-ZM300A

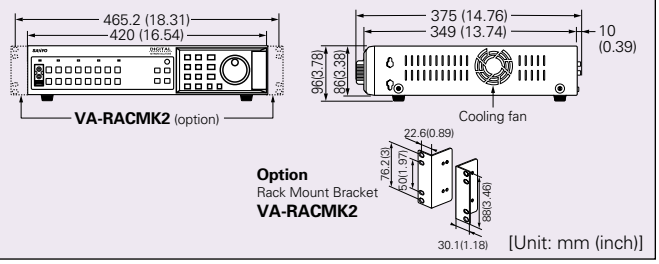
Pan Tilt Zoom
1/4" color CCD DSP High-resolution
Speed Dome Camera
VCC-9400 DAY NIGHT
VCC-9300

System Example No.2



LAN connection enables video monitoring and DVR setup/control from a remote location

DSR-3716/DSR-3709



MODEL		DSR-3716	DSR-3709
General	Hard disk Capacity	80 GB, 160GB or 300 GB	
	Picture resolution	720 x 240 (pixels)	
	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	
	Date/clock setup	Month, Day, Year, Hour, Minute, Second	
Search Mode		Time/Date Search, Alarm Search, Alarm Thumbnail Search, Archive Area Search, Motion detection search	
Video	Signal format	NTSC standard (color) / EIA standard (B/W) auto select, 525 lines, 60 fields/sec	
	Video input	VBS / VS 1.0 V (p-p) 75Ω BNC x 16	VBS / VS 1.0 V (p-p) 75Ω BNC x 9
	Video output	BNC x 16	BNC x 9
	Main monitor output	VS 1.0 V (p-p) 75Ω BNC x 1	
	Monitor 2 output	VBS / VS 1.0 V (p-p) 75Ω BNC x 1	
Audio	Audio input	-8 dBs 27 kΩ unbalanced, RCA x 1	
	Audio output	-8 dBs 600 Ω unbalanced, RCA x 1	
	Microphone input	-60 dBs 10 kΩ unbalanced, 3.5 mm mini jack x 1	
Front AV	Video output	1.0 V (p-p) 75Ω unbalanced, RCA x 1	
	Audio output	-8 dBs 600 Ω unbalanced, RCA x 1	
Interface	CompactFlash slot	CF type 2	
Control signal	LAN	10BASE-T/100BASE-TX, RJ-45 x 1 Compatible protocol: UDP, TCP/IP, HTTP server	
	RS-485/422	RJ-11 x 2 (With a termination switch)	
	USB	USB1.1 Series terminal x 2 (Front x 1, Rear x 1)	
	Alarm input	No-volt contacts (100ms or more) x 16	No-volt contacts (100ms or more) x 9
	Sensor alarm output	Open collector, Low level active (Max. 25 mA) x 16	Open collector, Low level active (Max. 25 mA) x 9
	Remote Control input	Two-wire voltage control x2	
	Clock set input	No-volt contacts (100ms or more) x 1	
	Clock set output	Normal 5 V Low level active x 1	
	Alarm output	Active low, Open collector MAX. 500mA x 1	
	Alarm reset	No-volt contacts (100ms or more) x 1	
	Warning output	Normal DC 5 V Low level active x 1	
	Disk full output	Normal DC 5 V Low level active x 1	
	Alarm full output	Normal DC 5 V Low level active x 1	
	Series input	Normal DC 5 V Low level active x 1	
	Series output	Normal DC 5 V Low level active x 1	
	External timer input	No-volt contacts (1 second or more) x 1	
	NON Rec output	Normal DC 5 V Low level active x 1	
Electrical	Power source	120 to 240 V AC, 50 / 60 Hz	
	Power consumption	600 mA	
	Operating conditions	Temperature: 5°C to 40°C [41°F to 104°F], Humidity: 10% to 80%	
Physical	Dimensions	420(W) x 96(H) x 365(D) mm [16.54(W) x 3.78(H) x 14.37(D) in.]	
	Weight (Approx.)	6.3 kg [13.9 lbs.] (with one HDD unit)	
Regulatory		UL, CSA, FCC Class B, DOC Class B	

NOTE: 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. • Two USB terminals cannot be used simultaneously.

External Disc Unit (Optional)

VA-EXD1W

This external CD-Writer is a perfect match for the DSR-3716 / DSR-3709.
(sold separately) Available soon

Horizontal resolution 520 TV line cameras

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

1/3" Color CCD DSP High-sensitivity/resolution Camera
VCC-5984

1/3" Color CCD DSP High-resolution Camera
VCC-6584

1/3" Color CCD DSP High-resolution Day/Night Camera
VCC-4594 DAY NIGHT

1/4" Color CCD DSP High-resolution Weatherproof Day/Night Camera
VCC-XV400 DAY NIGHT

1/4" Color CCD DSP High-resolution Day/Night Speed Dome Camera systems
VCC-9100 DAY NIGHT Available soon

1/4" Color CCD DSP High-resolution Speed Dome Camera
VCC-9000 Available soon

1/4" Color CCD DSP High-resolution Day/Night Speed Dome Camera
VCC-9400 DAY NIGHT

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

1/4" Color CCD DSP High-resolution Day/Night AF Zoom Camera
VCC-ZM400 DAY NIGHT

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

1/4" Color CCD DSP High-resolution Day/Night Vandal Proof Dome Camera
VDC-D2184VA DAY NIGHT

1/4" Color CCD DSP High-resolution Day/Night Vandal Proof Dome Camera
VDC-D1184VA DAY NIGHT

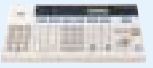
SSP compatible devices

Recorders

1ch Digital Video Recorder	**DSR-300**
4ch Digital Video Recorder	**DSR-M814**
1ch Digital Video Recorder	**DSR-M810**
960-hour Recording + Real Time VCR *The optional VZU-485/232C board is required	**SRT-8960**
168-hour Recording + Real Time VCR *The optional VZU-485/232C board is required	**SRT-8168**
40-hour Recording + Real Time VCR *The optional VZU-485/232C board is required	**SRT-8040**
40-hour Recording + Real Time VCR The optional VZU-40485 board is required	**SRT-4040**
40-hour Recording + Real Time VCR The optional VZU-40485 board is required	**SRT-4040DC**
8-hour Recording Real Time VCR	**SRC-850A**
960-hour Recording Time Lapse VCR The optional VZU-40485 board is required	**TLS-4960**
72-hour Recording Time Lapse VCR The optional VZU-40485 board is required	**TLS-4072**

SSP System Units

SSP System Controller
VSP-8000



SSP Coaxial Converter
VSP-CB10

Cameras

1/4" Color CCD DSP High-resolution Day/Night Speed Dome Camera DAY NIGHT	**VCC-9400**
1/4" Color CCD DSP High-resolution Speed Dome Camera	**VCC-9300**
1/4" Color CCD DSP High-resolution Day/Night Speed Dome Camera systems DAY NIGHT Available soon	**VCC-9100**
1/4" Color CCD DSP High-resolution Speed Dome Camera systems Available soon	**VCC-9000**
1/4" Color CCD DSP High-resolution Day/Night AF Zoom Camera DAY NIGHT	**VCC-ZM400**
1/4" Color CCD DSP High-resolution AF Zoom Camera	**VCC-ZM300**

Multiplexers

16-channel Digital Transport Multiplexer (Color)	**MPX-CD163**
16-channel Duplex Multiplexer (Color)	**MPX-CD162**
16-channel Duplex Multiplexer (B/W)	**MPX-MD162**
9-channel Digital Transport Multiplexer (Color)	**MPX-CD93**
9-channel Duplex Multiplexer (Color)	**MPX-CD92**
9-channel Duplex Multiplexer (B/W)	**MPX-MD92**

IP Product

Network Video Server
VSP-SV2000

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

DI Solutions Company of SANYO Electric Co., Ltd. obtained Quality Management System ISO9001 and Environmental Management System ISO14001 certifications.

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