Panasonic

ideas for life

Digital Disk Recorders

WJ-HD316A
WJ-HD309A

Version 2.1

The Comprehensive Digital Recording Solution

DIGITAL DISK RECORDERS

WJ-HD300A SERIES

The WJ-HD300A Series offers high quality pictures and disk saving recording utilizing a new compression technology.

Panasonic presents the new WJ-HD300A Series with a unique new system featuring a high compression ratio of 1/30 for practical use. Under the "All-in-One Solution" concept, all the vital recording components and features are condensed into one unit. With one single unit, unprecedented, highly reliable surveillance recording is possible in a wide range of applications. The WJ-HD300A Series also features System Scalability to meet extended user needs.

1/30 Super Compression: Proprietary Algorithm, Core Development of the WJ-HD300A Series

- New algorithm divides entire screen into high and low frequency elements to reduce artificial distortion and noise compared to conventional compression.
- In addition, the mode-A compression data calculation within four (4) field images (called “Temporal Transforms”), outputs data according to the amount of movement: “No Movement,” “Slow Speed Movement,” “Medium Speed Movement,” and “High Speed Movement.” Redundant data can be reduced through this compression process.

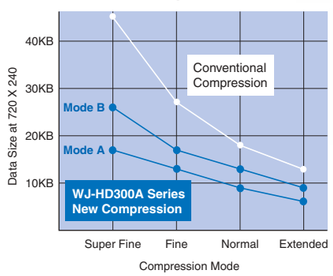
WJ-HD316A

WJ-HD309A

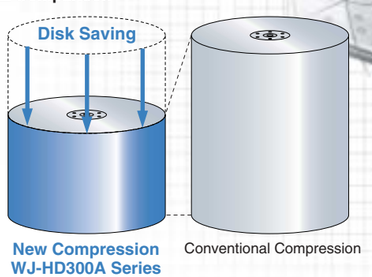
Picture Quality & Disk Saving

Compared to a conventional algorithm, the data compression ratio has improved approximately 1.5 ~ 2, depending on object and compression mode.

■ **Data Size and Compression Mode**



■ **Comparison**



All in One Solution

Instinctive Operation

Simple and instinctive, the functional base layout of the WJ-HD300A Series front panel is designed for ease-of-use. Eight (8)* directly connected Panasonic dome cameras can be controlled from the front panel. Also, the GUI based menu screen enables quick set up for flexible, more complex operations.

(* Six (6) cameras for the WJ-HD309A)

OPERATION BASE LAYOUT

GUI BASE MENU

Value Added Features

The WJ-HD300A Series is equipped with the latest value added features to satisfy your requirements such as system reliability, operation efficiency, and cost savings.

Features include:

- High-density recording: 60 ips* (120 ips* @SIF)
- Full rate live multi screen: 60 ips*
- Simultaneous Live/Rec./Playback/Network
- 16 independent recording profiles
- Disk partitioning: Normal, Alarm, and Copy
- RAID 5 and mirror redundant recording
- Advanced VMD (Video Motion Detector): Area, vector, and duration.
- Various Network Operations: Live, PTZ control, Recording, Playback, and Downloading
- Network and serial open architecture

(* ips = image per second)

*The above all photographs were taken for the purpose of explanation ; actual images may differ.

Superior surveillance made possible by state-of-the-art digital features.

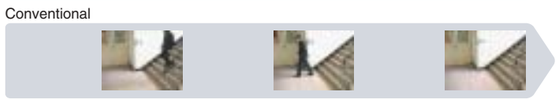
High-Refresh Rate Recording

High-speed digital processing enables high-refresh rate recording — to ensure critical moments are not missed.

Max. **30** image per sec. @ 720 x 480 (FRAME/NTSC)
Max. **60** image per sec. @ 720 x 240 (FIELD/NTSC)
Max.**120** image per sec. @ 360 x 240 (SIF/NTSC)

WJ-HD300A Series

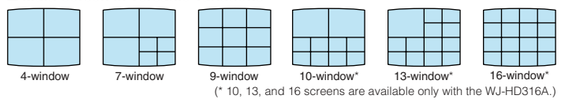
Conventional



Full Rate Live Multi-Screen

Even when images from multiple cameras are displayed on a multi-screen, live monitoring can be achieved on all cameras at a full rate of 60 ips (image per second). Experience real-time, full surveillance with full-rate video images.

■ **Multi-screen in versatile variations**



(* 10, 13, and 16 screens are available only with the WJ-HD316A.)

16 Independent Recording Profiles

Flexible recording setup

Independent recording settings (recording mode/recording rate/picture quality) for each camera* enables flexible setup. (*16 cameras for the WJ-HD316A and 9 cameras for the WJ-HD309A.)

• **Recording mode:** Manual / Schedule / Event / Emergency • **Recording rate:** Set the ips (image per second) as needed. • **Picture quality:** Super Fine / Fine / Normal / Extended

User-friendly setup

The user friendly GUI supports easy and smooth setup while confirming current status graphically.

■ **GUI Setup Menu**

Time Table

Recording Action PROG 1

Recording Program 1

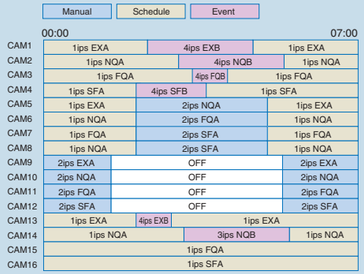
■ Resolution FIELD
■ Recording Table 60 ips
■ Total REC Rate 48 ips

(ips = image per second)

	MANUAL		SCHEDULE		PRE EVENT			POST EVENT		
	RATE	QUALITY	RATE	QUALITY	RATE	QUALITY	TIME	RATE	QUALITY	TIME
CAM1	2ips	EXA	1ips	EXA	1ips	FQB	5s	4ips	EXB	30s
CAM2	2ips	NQA	1ips	NQA	1ips	FQB	5s	4ips	NQB	30s
CAM3	2ips	FQA	1ips	FQA	1ips	FQB	5s	4ips	FQB	10s
CAM4	2ips	SFA	1ips	SFA	1ips	SFB	5s	4ips	SFB	20s
CAM5	2ips	NQA	1ips	EXA	1ips	EXB	5s	3ips	EXB	30s
CAM6	2ips	FQA	1ips	NQA	1ips	NQB	5s	3ips	NQB	30s
CAM7	2ips	SFA	1ips	FQA	1ips	FQB	5s	3ips	FQB	30s
CAM8	2ips	SFA	1ips	NQA	1ips	SFB	5s	3ips	SFB	30s
CAM9	2ips	EXA	OFF	EXA	1ips	EXB	5s	2ips	EXB	30s
CAM10	2ips	NQA	OFF	NQA	1ips	NQB	5s	2ips	NQB	30s
CAM11	2ips	FQA	OFF	FQA	1ips	FQB	5s	2ips	FQB	30s
CAM12	2ips	SFA	OFF	SFA	1ips	SFB	5s	2ips	SFB	30s
CAM13	2ips	EXA	1ips	EXA	1ips	SFB	5s	4ips	EXB	10s
CAM14	2ips	NQA	1ips	NQA	1ips	SFB	5s	3ips	NQB	30s
CAM15	2ips	FQA	1ips	FQA	1ips	FQB	5s	3ips	FQB	30s
CAM16	2ips	SFA	1ips	SFA	1ips	SFB	5s	2ips	SFB	30s

OK CANCEL

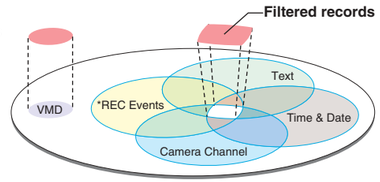
■ Actual recording result (Example)



Instant Search and Playback

Filtered Search

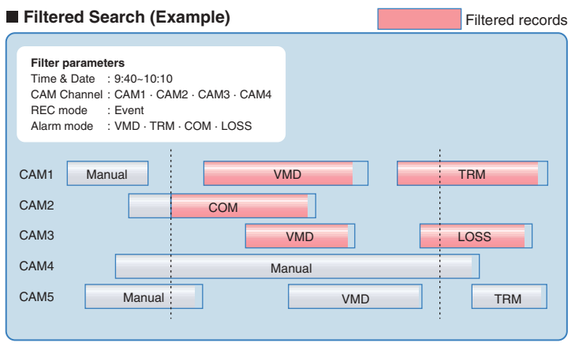
Various parameters/filters such as time & date, camera channel, REC events, text and VMD enables instant search and playback from mass recorded data.



*** REC Event filter**

REC mode	Emergency, Event, Schedule, Manual
Alarm mode	VMD, Terminal, Command, Video loss

■ **Filtered Search (Example)**

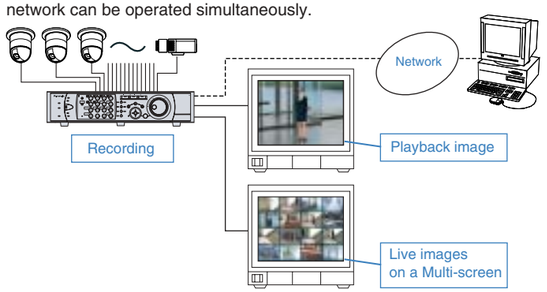


Thumbnail Display

In addition to search result by "list", "thumbnail" display is available for visual confirmation.

Live / Recording / Playback / Network Simultaneous Performance

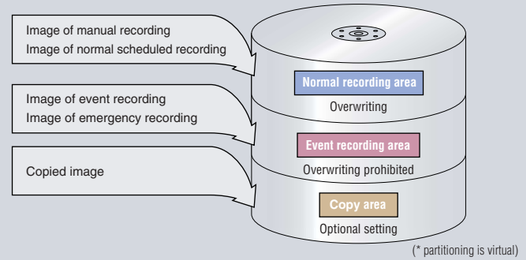
By adopting high speed signal processing, live / recording / playback / network can be operated simultaneously.



Disk Management

Hard Disk Partitioning Function* automatically selects the partition to be recorded.

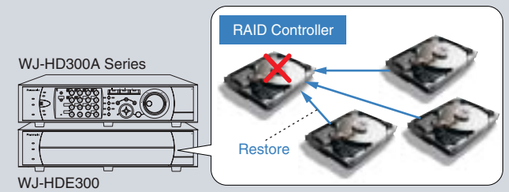
The hard disk is divided into three partitions: "Normal Recording," "Event Recording," and "Copy." Image data is automatically recorded to the appropriate partition according to the recording mode. For the normal recording partition, the data is overwritten when the capacity is full. The event recording partition prohibits overwriting to protect data. Copy partition prepares data for retrieval to external medium.



(* partitioning is virtual)

RAID5 / Mirroring Function

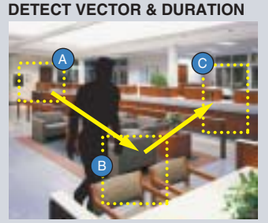
RAID5 distributes image data to multiple hard disks in the extension unit. Upon hard disk breakdown, lost data can be restored from other hard disks. When using one WJ-HD300A Series unit, mirroring function is available for data backup.



Advanced VMD

A new mode is added for sophisticated VMD detection.

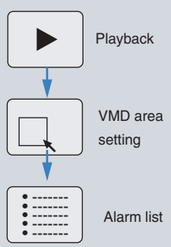
DETECT VECTOR & DURATION



DETECT A 5sec. B 10sec. C

Playback VMD

One VMD area can set one playback image for motion search.



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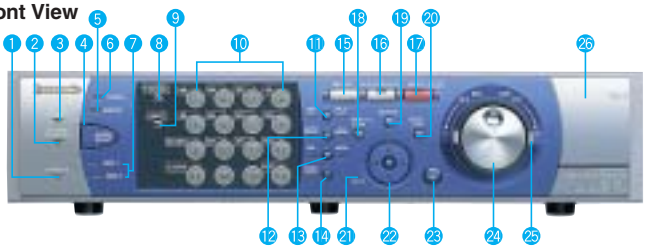
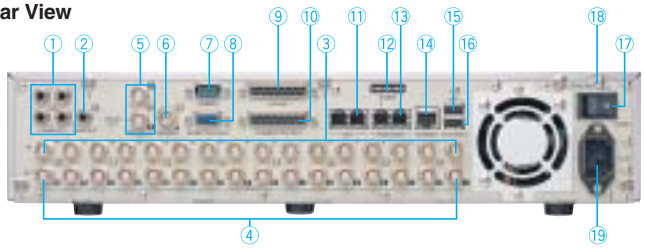
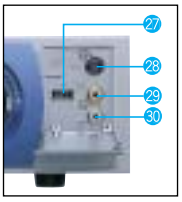
MAJOR OPERATING CONTROLS: WJ-HD316A

Front View



Rear View

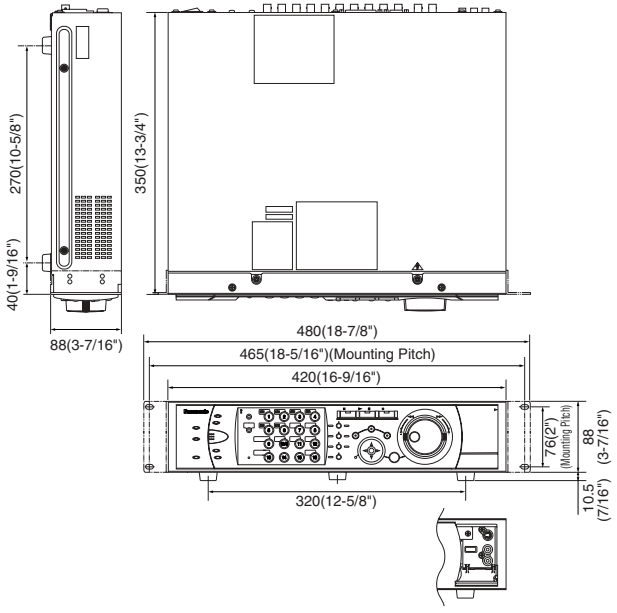




1. Operate Indicator
2. Alarm Suspension Indicator
3. Alarm Indicator
4. Alarm Reset Button
5. Error Indicator
6. Timer Indicator
7. HDD Access Indicators
8. Monitor Switch Button
9. Shift Button
10. Camera Selection Buttons
11. Pan, Tilt, Latest Recorded Image Playback Button
12. Zoom, Focus, A - B Repeat Button
13. Iris, Listing Button
14. Preset, Auto Pan Button
15. Stop Button
16. Play/Pause Button
17. Record Button
18. Slow Button
19. Search Button
20. Setup, Escape Button
21. Busy Indicator
22. Arrow Buttons
23. Set Button
24. Jog Dial
25. Shuttle Ring
26. Connectors Cover
27. Copy Port
28. S-Video Output Connector
29. Video Output Connector
30. Audio Output Connector

1. Audio Input Connectors
2. Audio Output Connector
3. Video Input Connectors
4. Video Output Connectors
5. Monitor Output Connector
6. Cascade In Connector
7. Serial Connector
8. Monitor Connector
9. Alarm Connector
10. Alarm/Control Connector
11. PS·Data Ports
12. Mode Switches
13. RS485 Ports
14. Network Port
15. Copy Port
16. Extra Storage Port
17. Power Switch
18. Signal Ground Terminal
19. Power Cord Inlet

DIMENSIONS: WJ-HD316A



Unit : mm (inches)

SPECIFICATIONS: WJ-HD316A

General		
Power Source		120 V AC, 60 Hz
Power Consumption		85 W
Ambient Operating Temperature		+5°C - +45°C (41°F - 113°F)
Ambient Operating Humidity		Less than 90 %
Dimensions		420 mm (W) x 88 mm (H) x 350 mm (D) [16-9/16" (W) x 3-7/16" (H) x 13-3/4" (D)] (excluding rubber feet and projections)
Weight		9.5 kg (21 lbs.)
Input/Output		
Video	Video Input Connectors	1 V [P-P] / 75 Ω, with auto termination loop-thru, vertical timing pulse multiplexed, x8 (1 to 8 CH) (BNC)
		1 V [P-P] / 75 Ω, with auto-termination loop-thru, x8 (9 to 16 CH) (BNC)
	Cascade Input Connector	1 V [P-P] / 75 Ω (BNC)
	Video Output Connectors	1 V [P-P] / 75 Ω, active loop-thru output, x8 (1 to 8 CH) (BNC)*1
		1 V [P-P] / 75 Ω, active loop-thru output, x8 (9 to 16 CH) (BNC)
	Monitor Output Connectors	1 V [P-P] / 75 Ω, x2 (BNC)
	Monitor Output Connector (VGA)	RGB output, x1 (15-pin D-sub)
	S-Video Output Connector	Y = 1 V [P-P] / 75 Ω, C = 0.286 V [P-P] / 75 Ω, x1 (S-video output connector)
	Video Output Connector (Front Panel)	1 V [P-P] / 75 Ω, x1 (RCA pin)
Audio	Audio Input Connectors	–10 dB, 10 KΩ, x4 (RCA pin)
	Audio Output Connectors	–10 dB, 600 Ω, unbalanced, x2 (RCA pin)
Others	Expansion Connector	High-speed serial interface, 480 Mbps (theoretical value), x1
	Copy Connectors	High-speed serial interface, 480 Mbps (theoretical value), x2
	Control Connectors	Emergency recording input*2, additional space warning output*3 (for devices connected to copy connectors), HDD trouble output*3, camera trouble output*3, trouble output*3, electricity failure recovery completion output*4, time adjust input/output*5, sequence switching input/output*5, electricity failure detection input*2, external recording mode switching*2 (25-pin D-sub), +5 V output*7
	Alarm Port	1 to 8 CH alarm input*6, 1 to 16 CH alarm input*2, 1 to 16 alarm output*3, alarm recovery input*2, alarm suspension input*5 (25-pin D-sub)
	RS-485 Ports	RS-485 (full duplex/half duplex*8), x2 (RJ-11)
	DATA Ports	RS-485, x2 (RJ-11)
	SERIAL Connector	RS-232C, x1 (9-pin D-sub)
	Ethernet Port	10 Base-T/100 Base-TX (RJ-45)

*1. When power is not supplied, video output signal was not sent from the unit even if video input signal is supplied.
*2. Non-voltage N.O. Contact, 100 mA, +5 V pull-up *3. Open collector output, maximum under conditions of 24 V DC and 100 mA or less *4. High (+12 V, 6.3 mA) *5. 30 KΩ, 5 V pull-up, –100 mA, N.O. Contact *6. 5 V pull-up, –100 mA, Non-voltage N.O. Contact input *7. 240 mA at maximum *8. Changeable with the mode switch

DISK DATA REFERENCE CHART • NTSC color video signal • Recording images from a single camera channel • 250GB HDD • Auto mode • Manual recording • Audio OFF

COLOR FINE — Field Mode (Sampling Pixel Size: 720 x 240)

One Camera ch (ips*)	SFB	FQB	NQB	EXB
0.1	17,880	26,820	35,760	53,650
0.5	3,570	5,360	7,150	10,730
1	1,780	2,680	3,570	5,360
5	350	530	710	1,070
7.5	230	350	470	710
15	110	170	230	350
30	50	80	110	170
60	20	40	50	80

*ips (image per second) (Hours)

COLOR STD — Field Mode (Sampling Pixel Size: 720 x 240)

One Camera ch (ips*)	SFB	FQB	NQB	EXB
0.1	23,840	35,760	47,680	71,530
0.5	4,760	7,150	9,530	14,300
1	2,380	3,570	4,760	7,150
5	470	710	950	1,430
7.5	310	470	630	950
15	150	230	310	470
30	70	110	150	230
60	30	50	70	110

*ips (image per second) (Hours)

COLOR FINE — SIF Mode (Sampling Pixel Size: 360 x 240)

One Camera ch (ips*)	SFB	FQB	NQB	EXB
0.1	35,760	53,650	71,530	107,300
0.5	7,150	10,730	14,300	21,460
1	3,570	5,360	7,150	10,730
5	710	1,070	1,430	2,140
7.5	470	710	950	1,430
15	230	350	470	710
30	110	170	230	350
60	50	80	110	170

*ips (image per second) (Hours)

COLOR STD — SIF Mode (Sampling Pixel Size: 360 x 240)

One Camera ch (ips*)	SFB	FQB	NQB	EXB
0.1	47,680	71,530	95,370	143,060
0.5	9,530	14,300	19,070	28,610
1	4,760	7,150	9,530	14,300
5	950	1,430	1,900	2,860
7.5	630	950	1,270	1,900
15	310	470	630	950
30	150	230	310	470
60	70	110	150	230

*ips (image per second) (Hours)

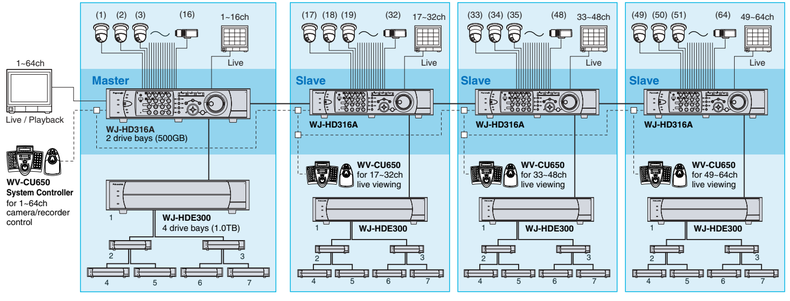
(above figures are approximate, actual recording time may differ depending on picture imaging under the conditions)

*The above all photographs were taken for the purpose of explanation ; actual images may differ.

System Scalability:

Viewing cascade connection (up to 4 main units)

Up to four (4) WJ-HD316A units can be cascaded to increase maximum 64 video inputs. All 64 cameras can be switched and viewed in live and playback from the master, while each slave unit has its own live viewing monitor.

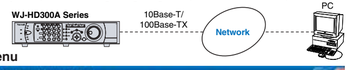


Expandable to 7.5 Terabytes (TB) storage

In addition to a total 500 GB capacity of the main unit WJ-HD316A/309A, one WJ-HDE300 extension unit provides up to 1.0 TB (1,000 GB). With seven (7) extension units, the maximum capacity can be extended up to 7.5 TB to satisfy long recording requirements.

Built-In Network Interface:

Network functions include live image monitoring through multi-screen display, camera PTZ control, recording/search/playback, downloading image/log data, e-mail notification, and setup data upload/download.



Network Operating Menu

Control Tab

The switcher function for live monitoring is operable.

Setup Tab

Setup of WJ-HD300A Series can be performed.

Cam Tab Remote control the camera selected on control tab page. (Only for 1-8ch Panasonic PTZ dome cameras)

HDD Tab Operation for recorded images such as playback or downloading (saving) to PC.

System Controller

WV-CU650

The Surveillance Cockpit for Total Control of the WJ-HD300A Series

KEY FEATURES

- **Controller for the WJ-HD300A Series of Digital Disk Recorders**

Integrated System Control

Camera Control

- Detached joystick controls Pan/Tilt and Zoom, allowing seamless tracking.
- Larger numeric keypad provides direct access to cameras.

Recorder Control

- Jog Dial and Shuttle Ring for smoother control
- Dedicated Record, Play, and Search buttons

Switcher Control

- Image switching and sequencing buttons for Matrix System150

Easy to Operate While Focused on Surveillance

Universal Design for Right or Left Hand Use

- Detached joystick pad
- Layout with Jog Dial and Shuttle Ring in center

More Comfortable Extended Surveillance

- Soft padding on joystick
- Adjustable joystick height for large or small hands
- Designed with a low center of gravity and adjustable angle to minimize strain

Instinctive Operation

- Cockpit style button layout

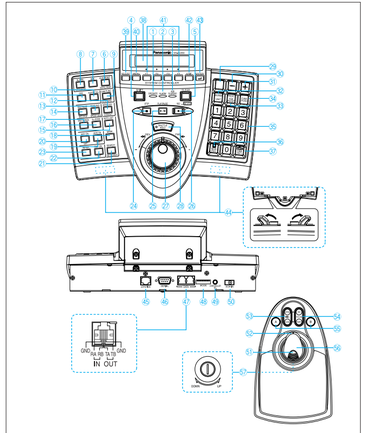
System Management Capability

- User level management for registered users
- User assignable buttons: four in main unit plus three in palm rest
- Setup data can be transferred via RS485 to another WV-CU650.

SPECIFICATIONS (for WJ-HD300A Series)

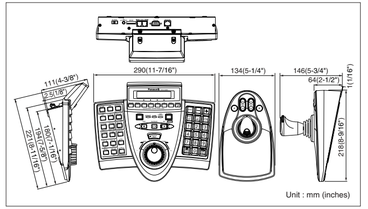
Power Source	9 V DC, 300 mA (using the supplied AC adapter)
Power Source (supplied AC adapter)	120 V AC, 60 Hz, 200 mA
Data Output/Input Port	6-conductor modular jack (RS-485, Full duplex) x2
Serial Port	9-pin D-sub connector
Controller Number	1 to 8 (rotary switch)
Ambient Operating Temperature	−10°C to +50°C (14°F to 122°F)
Unit Number Selection	Up to 16 (PS-Data)
Monitor Number Selection	1 to 2
Camera Number Selection	1 to 256 (up to 16 WJ-HD316A)
Dimensions (W x H x D)	Main Unit: 290 x 111 x 221 mm (11-7/16" x 4-3/8" x 8-11/16") 3D Joystick Unit: 134 x 146 x 218 mm (5-1/4" x 5-3/4" x 8-9/16")
Weight (without the AC adapter)	Main Unit: 1.3 kg (2.86 lbs.) 3D Joystick Unit: 0.8 kg (1.76 lbs.)

MAJOR OPERATING CONTROLS



1 Operation Indicator
2 Alarm Indicator
Alarm Suspend Indicator
4 Shift Button
5 Clear Button
6 Alarm Reset/Alarm All Reset Button
7 Alarm Acknowledge Button
8 Alarm/Alarm Suspend Button
9 Camera Function/
System Function Button
10 Alarm Recall Button
11 On-Screen Display Button
12 Monitor Lock/Logout Button
13 Tour Sequence/
Group Sequence Button
14 Sequence Pause/
Sequence Stop Button
15 Go To Last Button
16 Electronic Zoom Button
17 Multiscreen Selection Button
18 Mark Button
19 Auxiliary 2 ON/OFF Button
20 Auxiliary 1 ON/OFF Button
21 Search/Time and Date Search Button
22 Defroster Button
23 Wiper Button
24 Stop Button
25 Play/Pause Button
26 Recording Button
27 Shuttle Ring (Outside)/JogDial (Inside)
28 Shuttle Hold Button
29 History Button
30 − Button
31 + Button
32 Recorder/Unit Selection Button
33 Preset/Program Preset Button
34 Camera Position Button
35 Numeric Buttons
36 Monitor/Escape Button
37 Camera/Set Button
38 LCD
39 Adjustment Button
40 Menu Button
41 Function Buttons
42 Exit Button
43 Enter Button
44 Feet
45 Joystick Connector
46 Serial Port
47 Data Ports
48 Mode Selection Switches
49 Controller Number Switch
50 DC 9V Input Jack
51 Top Button
52 Zoom Wheel Controller
53 Iris Control Buttons
54 Focus Control Buttons
55 A and B Buttons
56 3D Joystick
57 Adjusting Screw

DIMENSIONS



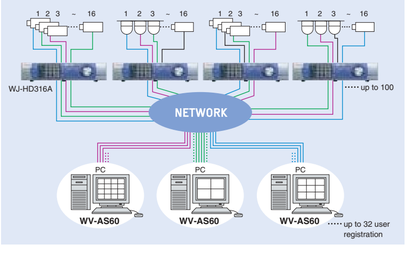
Disk Recorder Management Software

WV-AS60

The Software for Integrated Management of Up to 100 WJ-HD300A Series

1 Title Bar
2 Menu Bar
3 Tool Bar
4 FAVORITE Tab
5 RECORDER Tab
6 Image Display Area
7 Information Display Area
8 Channel Search Buttons
9 Recorder Status Display Area
10 Electronic Zoom Operation Area
11 Camera Control Panel
12 Recorder Control Panel
13 Status Bar

SYSTEM DIAGRAM



Main Application

Network mode

WV-AS60 operates the WJ-HD300A Series of Digital Disk Recorders remotely via the network.

- Facilitates monitoring live images captured by cameras connected to the recorder and camera operation.
- Makes possible the recording, search and playback of recorded images from multiple recorders.

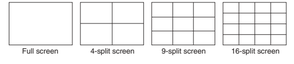
Local mode

WV-AS60 facilitates search, playback and management of image files downloaded on PC hard disk.

Downloader

WV-AS60 downloads images recorded on the disk recorder.

Displays four patterns (1, 4, 9, 16 screens) of recorded live images or playback images.



Main unit operation

There are a variety of operations that can be performed with the disk recorder alone: manually starting and stopping the recording, text attachment to recorded image, recorder log display, and data copying.

Three search functions

Three types of search functions are installed: recorded event search, playback VMD search, and marking search. A number of recorders can be searched simultaneously and required images can be retrieved quickly.

SPECIFICATIONS

WJ-HD300A Series Registration Capacity	up to 100 sets
User Registration Capacity	up to 32 users
User Types	5 types
Schedule Registration Capacity	up to 400 schedules
Favorite Registration Capacity	up to 500
Simultaneous Downloads	up to 10 accesses
Simultaneous Camera Image Displays	up to 16 cameras
Simultaneous File Playbacks	up to 4 files

*32 WV-AS60 users can be registered, however, accessing a single WJ-HD300A recorder at the same time, the maximum number is 4 users.

OPERATING ENVIRONMENT

This PC software can be installed in PCs with the following environments

OS	Microsoft® Windows® 2000 Professional SP4 Microsoft® Windows® XP Professional or Home Edition SP1
Computer	IBM PC / AT Compatible
CPU	Pentium® 4, 1.4 GHz or above
Memory	512MB or above
Hard Disk Capacity	About 40MB level is required for application installation.* 1024 x 768 pixel resolution level or above, HIGH color 16 bits or above (Full-color environment is recommended)
Interface	10 / 100Mbps network interface card installed
Web Browser	Microsoft® Internet Explorer 6.0 SP1

*It is necessary to prepare space to receive files from the recorder that is separate from the application installation.

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• Other company names and product names are trademarks or registered trademarks of the respective companies.

*The above all photographs were taken for the purpose of explanation ; actual images may differ.

STANDARD PRODUCT CONFIGURATIONS

Digital Disk Recorders

WJ-HD316A (16ch)

WJ-HD309A (9ch)

- Built-in 250GB HDD unit, and 1 drive bay for optional HDD unit
- Built-in an Ethernet port

OPTIONAL COMPONENTS & ACCESSORIES

Extension Unit

WJ-HDE300

(4 drive bays for optional HDD units)

System Controllers

WV-CU360C

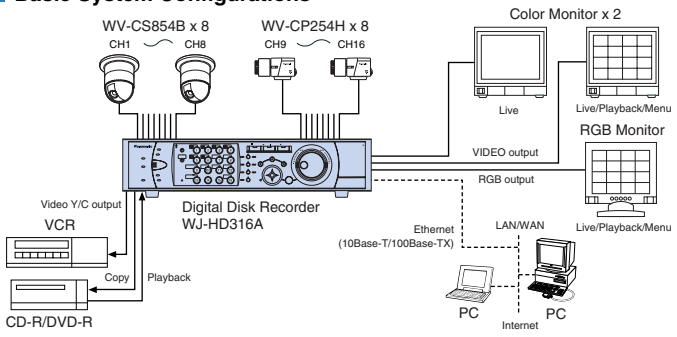
WV-CU650

Disk Recorder Management Software

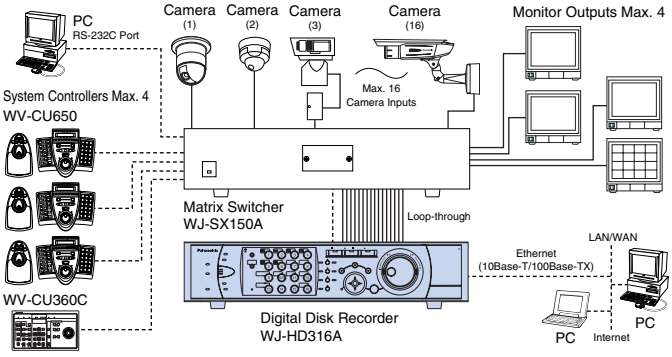
WV-AS60

SYSTEM EXAMPLES

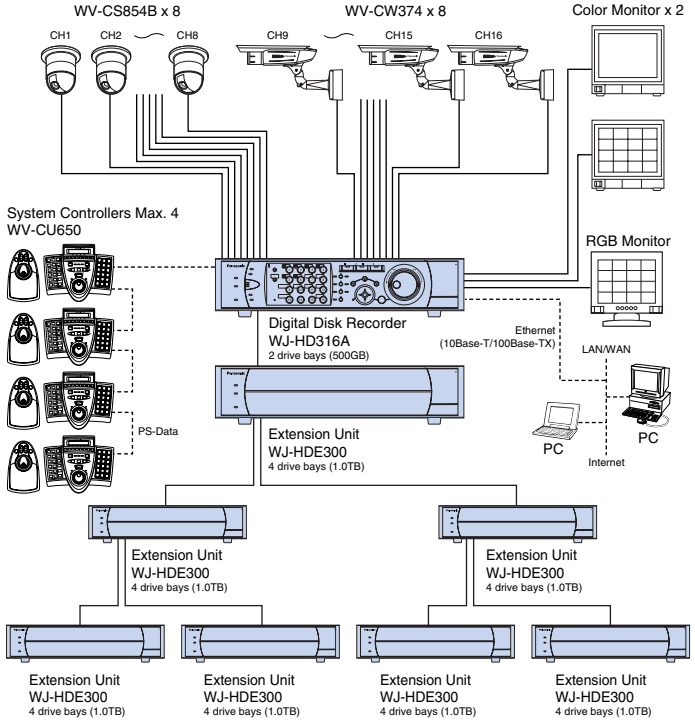
1 Basic System Configurations



2 With optional Panasonic Matrix System 150



3 Up to 7.5TB Capabilities with Optional Extension Unit & HDDs



OPTIONAL SURVEILLANCE EQUIPMENTS

COLOR SURVEILLANCE CAMERAS

Weather Proof & Vandal Resistant Color Dome Camera

WV-CW864A

Super Dynamic Ⅱ Color Dome Camera

WV-CS854B

Weather Proof Super Dynamic Ⅱ Color Camera

WV-CW374

Vandal Proof Super Dynamic Ⅱ Color Cameras

WV-CW474A Series

Vandal Proof Color Cameras

WV-CW244 Series

Super Dynamic Ⅱ Color Surveillance Cameras

WV-CP470 Series

(Lens: option)

Compact Color Surveillance Camera

WV-CP254H

(Lens: option)

1/3-type DSP Color CCD Cameras

WV-CP240 Series

(Lens: option)

Color Dome Camera

WV-CF224

MATRIX SYSTEM 150

Important – Safety Precaution: carefully read the operating instructions and installation manual before using this product.
– Panasonic can not be responsible for network performance and/or other manufacturer products that reside on the network.

- All TV pictures are simulated. • Weights and dimensions are approximate. • Specifications are subject to change without notice. • These products may be subject to export control regulations.

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