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You can read the recommendations in the user guide, the technical guide or the installation guide for SANYO DSR-3016. You'll find the answers to all your questions on the SANYO DSR-3016 in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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SANYO

INSTRUCTION MANUAL

**Digital Video Recorder
with Multiplexer Function**

**DSR-3016
DSR-3009**



DSR-3016



DSR-3009

About this manual
Before installing and using this unit, please read this manual carefully. Be sure to keep it handy for later reference.



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Manual abstract:

NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL. CAUTION: WARNING: To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture. **CAUTION:** Changes or modifications not expressly approved by the manufacturer may void the user's authority to operate this equipment. The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product. **Location** For safe operation and satisfactory performance of your unit, keep the following in mind when selecting a place for its installation: Shield it from direct sunlight and keep it away from sources of intense heat. Avoid dusty or humid places. Avoid places with insufficient ventilation for proper heat dissipation. Do not block the ventilation holes at the top and bottom of the unit.

Do not place the unit on a carpet because this will block the ventilation holes. Install the unit in a horizontal position only. Avoid locations subject to strong vibrations. Avoid moving the unit between cold and hot locations. Do not place the unit directly on top of a monitor TV, as this may cause playback or recording problems.

..... This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generated, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. Consult the dealer or an experienced radio/TV technician for help. **Avoiding Electrical Shock and Fire** Do not handle the power cord with wet hands. Do not pull on the power cord when disconnecting it from an AC wall outlet. Grasp it by the plug. If any liquid is spilled on the unit, unplug the power cord immediately and have the unit inspected at a factory-authorized service centre. Do not place anything directly on top of this unit. For the customers in Canada This class B digital apparatus complies with Canadian ICES-003. **SERVICE** This unit is a precision instruments and if treated with care, will provide years of satisfactory performance.

However, in the event of a problem, the owner is advised not to attempt to make repairs or open the cabinet. Servicing should always be referred to your dealer or Sanyo Authorized Service Centre. **CAUTION** Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacture's instructions. English 1 CONTENTS MAIN FEATURES

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4-screen display. · For the DSR-3009 model, the 4-screen display changes each time the QUAD button is pressed (1 4, 5 8, 9 3). 2 FULL indicator Flashes when overwriting is set to off and the remaining space in the normal recording area of the hard disk drops to 1%*. In addition, if the amount of remaining space in the recording area drops to 0%, recording stops and the indicator stops flashing and illuminates steadily. If the "AREA FULL RESET" command in the main menu (See page 51.) is used, the indicator will switch off. (* This can be changed using the menu settings.) 8 Multiple display button and indicator (MULTI) This button lets you switch the display to a 16-screen display or 9-screen display while monitoring is being carried out using the single-screen or 4-screen display.

When the MULTI button is pressed, the 9-screen display or 16-screen display appears, and the split-screen display then changes each time the button is pressed again. The indicator illuminates, but turns off when any other screen switching operations are carried out. · For the DSR-3009 model, a 9-screen display will appear. The 16-screen display is not available. 3 ALARM FULL indicator Flashes when overwriting is set to off and the remaining space in the alarm recording area of the hard disk drops to 1%*.

In addition, if the amount of remaining space in the recording area drops to 0%, recording stops and the indicator stops flashing and illuminates steadily. If the "AREA FULL RESET" command in the main menu (See page 51.) is used, the indicator will switch off. (* This can be changed using the menu settings.) 4 LOCK indicator Illuminates when the security lock is engaged using the menu and operations are locked.

If a button is pressed while the lock is engaged, the buzzer sounds. The indicator will flash at this time and the password entry screen will be displayed on the monitor. 9 Monitor 2 setting button (MON2) If this button is pressed while a monitor is connected to the MON2 connector at the rear of the digital video recorder, the monitor 2 output status can be changed. The default setting is for automatic switching display. If a camera select button is pressed, images from the selected camera can be displayed. The indicator illuminates while monitoring is in progress. 5 ALARM indicator Illuminates during pre-alarm recording. Flashes during alarm recording. F Plus display button and indicator (PLUS) This button lets you display a specified image in the lower-right quarter of the screen area (6-screen display or 13-screen display). When the PLUS button is pressed, the lower-right quarter of the screen is displayed and the indicator flashes.

If you press the camera select button for the images required, those images appear in the quarter screen. The following operations can be carried out when this quarter screen is being displayed. · If the MULTI button is pressed, the screen changes to a 6-screen display or 13-screen display. The image in the quarter screen remains unchanged. (For the DSR-3009 model, only the 6-screen display is available.) · If the SEQUENCE button is pressed, the SEQUENCE indicator flashes and the quarter screen automatically changes. The automatic screen switching speed can be set using the menu screen. (See page 82.) · If you press the PLUS button twice during playback, the camera images and the playback images are displayed.



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6 Camera select buttons and indicators When a camera is connected to one of the camera video input (CAMERA IN) connectors at the rear of the digital video recorder and the corresponding button is pressed, the indicator illuminates and images from that camera are displayed.

(Indicators) · During split-screen monitoring, the indicators for all of the cameras being displayed in the split-screen illuminate. · When there is alarm input, the indicator for the alarm input camera flashes. English 5 PART NAMES 1 2 3 4 5 7 8 H G K L O P S MENU EXIT/OSD PLAY/STOP C AR LE SHUTTLE JOG EN TE R T POWER FULL ALARM FULL LOCK ALARM ZOOM SEARCH STILL 1 2 3 4 5 6 7 8 QUAD MULTI SEQUENCE COPY SHUTTLE LOCK 9 10 11 12 13 14 15 16 MON2 PLUS REC/STOP TIMER ALARM U (DSR-3016) 6 9 F I J NM R Q G MENU button and indicator Used to display the menu screens (setting screens). N TIMER button and indicator When the button is pressed when recording is stopped, the digital video recorder switches to timer recording standby mode, and when the setting time is reached, timer recording starts. H ZOOM button and indicator Used to display the zoom screen in a single screen during image monitoring or playback.

The indicator flashes when the zoom screen is displayed. O PLAY/STOP button and indicator The indicator illuminates and playback of images in the normal recording area and alarm recording area starts. If pressed during playback, playback stops. I Automatic camera switching button and indicator (SEQUENCE) This button is used to automatically change the camera images that are being monitored in the single-screen, 4-screen or quarter-screen (plus-screen) display. When the SEQUENCE button is pressed, the indicator flashes and the screen changes automatically.

The camera indicator also changes to match the images on the screen. P STILL button and indicator When this button is pressed while images are being monitored or played back in a single screen, the indicator illuminates and the screen images are paused. If it is pressed again, playback resumes. Q SHUTTLE HOLD button and indicator If this button is pressed continuously for 2 seconds or more when the security lock has been set, the security lock is activated. This locks the speed for playback and frame advance. The indicator illuminates while locked. J REC/STOP button and indicator Use to start normal recording. The indicator illuminates during recording. If the button is pressed for 2 seconds or more during recording, recording stops and the indicator switches off. R ALARM buttons (û ALARM û) When these buttons are pressed during playback, playback skips to the previous or next alarm recording.

K EXIT/OSD button and indicator · When a menu screen is displayed · During recording, playback or while stopped If the button is pressed during recording or playback, superimposed information such as time and date and alarm status changes in the following order: Displayed at top Displayed at bottom Not displayed The indicator illuminates while information is displayed. The main menu or sub-menu is exited. S Jog (inner) and shuttle (outer) dials · During playback · The jog dial changes the playback speed. The shuttle dial fast-forwards and rewinds. Menu screens The jog dial moves the cursor and changes settings. The shuttle dial accepts settings. L SEARCH button and indicator If the button is pressed during recording or while the digital video recorder is stopped, the indicator illuminates and the search playback screen is displayed. If the button is pressed once more, the search playback screen is exited. T CompactFlash card slot Insert a CompactFlash card or microdrive here. U MENU RESET button Used to initialize menu settings (displayed menu settings only).

If this button is pressed while images are being monitored, the time is reset (0 minutes and 0 seconds). M COPY button and indicator If this button is pressed while the images being played back in a single screen are paused, the paused image is copied to the archive area of the hard disk or to a CompactFlash card, microdrive or CD-R drive. The indicator illuminates during copying. If the button is pressed during recording or while the digital video recorder is stopped, backups (copying to DAT) can be carried out. 6 English PART NAMES Rear panel DSR-3009 DSR-3016 1 2 3 4 MIC IN AUDIO OUT 11 MN O PC Card SLOT PC Card SLOT AUDIO IN 8 A 9 AC IN~ 12 13 14 15 16 ALARM IN 5 6 1 2 3 4 5 6 7 5 6 1 2 3 4 5 6 7 AUDIO IN 8 9 10 C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 CL MAIN MONITOR MON2 MAIN MONITOR MON2 DIGITAL IN OUT RS485 B A RS232C SENSOR ALARM OUT OCK RS485 REMOTE T OUT TERMINATE C R1 R2 ON ALL RESET SE W A ALA ALA LAR NON ARN RM RM M R REC ING OU ESET OU OU FULL FULL T T T P C OFF SVHS SVHS CONTROL DO NOT CONNECT TO PHONE LINE 7 8 9 7 8 9 FG H I JK L 1 PC card slot Connect a network card or SCSI card (sold separately) here.

Note: The PC card slot is for 16-bit 5 V cards only. Do not use 32-bit card bus types of card, as they may damage the PC card slot of the digital video recorder. M ALARM IN terminals (1 16) These terminals send alarm signals resulting from the operation of externally-connected alarm switches to the ALARM OUT control terminal for output. The DSR-3009 model has nine alarm input terminals. 2 AUDIO IN terminal 3 AUDIO OUT terminal 4 MIC IN terminal 5 VIDEO IN terminal The DSR-3009 model has nine input terminals.

N SENSOR ALARM OUT terminal (1 16) When a response is received from a motion sensor that has been set using the menu settings, an alarm signal is output. (open collector) The DSR-3009 model has nine alarm output terminals. O AC power socket (AC IN~) Securely insert the accessory power cord here. 6 VIDEO OUT terminal The DSR-3009 model has nine output terminals. P Power cord holder Secure the power cord to the holder using the accessory cord tie as shown in the illustration. 7 MAIN MONITOR S-VIDEO output terminal 8 MAIN MONITOR output terminal 9 MON2 output terminal F DIGITAL IN terminal G DIGITAL OUT terminal H RS485 control terminal I RS-232C terminal J ALL RESET button K RS-485 termination switch L Control connector Pin C REMOTE R1 REMOTE R2 CLOCK SET OUT ALARM OUT ALARM RESET NON REC OUT WARNING OUT FULL ALARM FULL C Ground Remote control input 1 Remote control input 2 Clock setting output (See page 46.) Alarm output Alarm reset Non REC output HDD error warning output HDD space warning output Alarm recording area space warning output Ground Signal English 7 CONNECTIONS Basic connections (DSR-3016 model) Nine cameras can be connected to the DSR-3009 model.



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Turn off the power for all components before connecting them. Be sure to carefully read the Instruction Manual for all equipment being connected to the digital video recorder. If the connections are incorrect, smoke or operating malfunctions may result.

PC Card SLOT 1 2 3 4 5 6 7 AUDIO IN 8 9 10 MIC IN AUDIO OUT 11 MIC IN 12 13 14 15 16 ALARM IN AC IN~ C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16
MAIN MONITOR MON2 IN DIGITAL OUT RS485 A B RS232C SENSOR ALARM OUT ALL RESET RS485 TERMINATE ON C AL NO WA AL OC AR K S
ALAR ARM N R RNIN REMOTE ET O M O RES EC O G O F U M F U T U T ET UT UT LL LL R1 R2 CL C OFF SVHS CONTROL DO NOT CONNECT TO
PHONE LINE S-VIDEO IN connector VIDEO IN connector Computer TV monitor (sold separately) TV monitor (sold separately) Connecting high image
quality (S-VHS) video equipment MAIN MONITOR MON2 IN DIGITAL OUT RS485 A B RS232C ALARM OUT RS485 TERMINATE ON ALL RESET C CL
AL NO WA AL OC AR K S ALAR ARM N R RNIN REMOTE ET O M O RES EC O G O F U M F U T U T ET UT UT LL LL R1 R2 C OFF SVHS CONTROL
DO NOT CONNECT TO PHONE LINE S-VIDEO IN connector 1 5 9 13 2 6 10 14 3 7 11 15 4 8 12 16 Connecting to an Amplifier Audio output Amplifier
(sold separately) Audio input PC Card SLOT 1 2 3 4 5 6 7 AUDIO IN 8 9 10 MIC IN AUDIO OUT 11 MAIN MONITOR MON2 IN SVHS 8 English
CONNECTIONS Digital series connections Digital video recorder (main) 1 5 9 13 2 6 10 14 3 7 11 15 4 8 12 16 POWER FULL ALARM FULL LOCK
ALARM MENU EXIT/OSD PLAY/STOP C AR LE SHUTTLE JOG EN TE R ZOOM SEARCH STILL 1 2 3 4 5 6 7 8 QUAD MULTI SEQUENCE COPY
SHUTTLE LOCK 9 10 11 12 13 14 15 16 MON2 PLUS REC/STOP TIMER ALARM TV monitor (sold separately) Digital video recorder (sub 1) ALARM
RESET ALARM ALARM OUT C IN WAR OU NIN TG ALA FU R LL M NO N OU RE TC CLOCK ADJUST AC IN C IN OUT FULL MIC IN AUDIO IN OUT
IN VIDEO LOOP OUT OUT Amplifier (sold separately) EJECT PC Card SLOT IN DIGITAL OUT SUB IN C A RS485 B SUB OUT RS232C C REMOTE C
NC NC C RS485 C SW OU T TERMINATE ON ALL RESET OFF IN LOOP OUT S-VIDEO OUT (sold separately) Digital video recorder (sub 2) Amplifier
(sold separately) MIC IN IN EJECT ALARM RESET ALARM ALARM OUT C IN WAR OU NIN TG ALA FU R LL M NO N OU RE TC CLOCK ADJUST AC
IN C IN OUT FULL AUDIO OUT IN PC Card SLOT VIDEO LOOP OUT OUT IN DIGITAL OUT SUB IN C A RS485 B SUB OUT RS232C C REMOTE C
NC NC C RS485 C SW OU T TERMINATE ON ALL RESET OFF IN LOOP OUT S-VIDEO OUT (sold separately) System control connections Use the RS-485
connector to connect a system controller (sold separately) to the digital video recorder. After connecting the system controller, you will need to carry out the
settings that are given in the CONTROL SET menu. (See page 76.) When using the RS485 (RJ-11) connector Connect modular cables (sold separately) to the
RS485 control connectors at the rear of the digital video recorder. · If using a straight-type cable Connect connector A to connector A and connector B to
connector B. · If using a cross-type cable Connect connector A to connector B and connector B to connector A. Straight type 1 2 6 3 4 5 6 Spare Spare IN
DIGITAL OUT RS485 A B RS23 To other connector A DO NOT CONNECT TO PHONE LINE To other connector A Cross type 1 2 6 3 4 5 6 Spare Spare
Straight-type cable 1 2 1 3 4 5 6 Cross-type cable 1 Spare Spare 1 2 1 3 4 5 6 6 1 6 Spare Spare English 9 CONNECTIONS External alarm sensor setup In
order to make an external alarm sensor operate, an external switch must be connected to an ALARM IN connector. When an intruder activates the external
switch (such as by opening a door), an alarm signal is received and an alarm can be made to sound. The DSR-3009 model uses the connectors marked *.
Connect an external switch to an ALARM IN connector Using as a monitor board during a motion sensor alarm When the motion sensor built into the digital
video recorder responds to an alarm, it outputs an alarm signal to the SENSOR ALARM OUT connector.

If a switching circuit such as a warning lamp is connected to this connector, the warning lamp will illuminate when there is a response from the motion sensor. If the warning lamp is fixed somewhere in the layout diagram for an area such as a factory, the location of the camera can be ascertained in an instant during an emergency. The pin corresponding to the number of the camera that generates a sensor response switches to Low. 1K * * * * * *

Rated values for each pin (at 25°C) · Max. current 25mA · Max.

voltage 25V · Max. power 40mW SENSOR ALARM OUT connector Connecting a remote control circuit If a remote control circuit is constructed as shown in the illustration and connected to the remote control input (R1 and R2) terminals of the CONTROL connector, the digital video recorder can be operated by remote control. (Contact LOW input) The DSR-3009 model can control up to nine cameras. R1 (When used alone) (When R2 SHIFT key is also pressed) 220 SW 1: Camera1* ; Spare 220 AC IN ~ ALARM IN R2 220 SW 17: Recording stop 220 SW 2: Camera2* 300 ; Spare ; Spare ; Automatic switching display ; Monitor 2 ; Plus screen display ; 4-screen display ; Multi-screen display ; Menu reset ; Spare ; Spare ; Spare ; Spare ; Spare ; Spare SW 18: Playback stop 300 SW 3: Camera3* 360 SW 19: Pause 360 SW 4: Camera4* C 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 SW 20: Search 470 470 SW 5: Camera5* 680 NSOR RM OUT CL OC SW 21: SHIFT (When R1 and R2 are pressed) 680 RS485 REMOTE T OUT TERMINATE C R1 R2 ON ALL RESET AL NO WA AL AR K S ALAR ARM N R RNIN M E R E M O U E S E C O U G O U F U L F U L L T L T T T SW 6: Camera6* C SW 22: Playback 820 820 SW 7: Camera7* 1.2k CONTROL SW 23: Recording 1. 2k OFF SW 8: Camera8* 1.8k SW 24: Menu 1.8k SW 9: Camera9* SW 25: Menu clear (Exit) 2.2k SW: Switch 2.2k SW 10: Camera10 3.3k SW 26: + 3.3k Note: The remote control cable should be no more than 5 m long. SW 11: Camera11 4.7k SW 27: 4.7k SW 12: Camera12 7.

5k SW 28: 3 7.5k SW 13: Camera13 13k SW 29: 2 13k SW 14: Camera14 27k SW 30: Zoom 27k SW 15: Camera15 68k SW 31: Copy 68k SW 16: Camera16 SW 32: Timer recording 10 English BUILT-IN HARD DISK Hard disk Recording areas The recording areas on the hard disk (normal recording area: 80%, alarm recording area: 19%, archive area: 1%) are established automatically when the power for the digital video recorder is turned on. Images are recorded in the normal recording area when the REC/STOP button is pressed, and they are recorded in the alarm recording area when an alarm occurs.



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This is called the default condition, and the following detailed settings can be confirmed in the sections on "RECORDING IMAGES IN THE NORMAL RECORDING AREA" and "RECORDING IMAGES IN THE ALARM RECORDING AREA" (See page 22.) which are explained later. Furthermore, settings such as the recording areas and picture quality can be changed using the menu screens. A Normal recording area · · When the REC/STOP button is pressed while monitoring is in progress, images are recorded in the normal recording area. When start and end times are entered for each day of the week and are then enabled, timer recording is automatically carried out in the normal recording area between the times that have been set. B Alarm recording area ALARM REC MODE SET menu settings are required. · Alarm recording is enabled when ALARM RECORDING is set.

When a suspicious person is detected by the switch or motion sensor that is connected to the alarm input terminal, an alarm is recorded in the alarm recording area. · Pre-alarm recording is enabled when PRE-ALARM RECORDING is set. Pre-alarm recording repeatedly records the same images as for normal recording in the alarm recording area, and overwrites these images after the set time interval, until an alarm is detected. When pre-alarm recording is set, the image immediately before an alarm occurred can be recorded. 1% C Archive area B Alarm recording area 19% 80% C Archive area This is the area for copying important images from the normal recording area and the alarm recording area.

The size of the archive area can be set to a maximum of 10 GB (12.5% of total capacity when using an 80-GB hard disk 6% of total capacity when using an 160-GB hard disk) by changing the size of the normal recording area or the alarm recording area. A Normal recording area Hard disk recording areas Menu screen (initial setting) This can be displayed by pressing the MENU button. <RECORDING AREA SET> TOTAL CAPACITY NORMAL RECORDING AREA

AREA FULL RESET -> ALARM RECORDING AREA AREA FULL RESET -> ARCHIVE AREA AREA FULL RESET -> A Setting screen for normal recording area picture quality, recording speed, etc. <NORMAL REC MODE SET> PICTURE QUALITY : NORMAL AUDIO RECORDING : ON REC RATE : 10FPS (57H) REC CAMERA GROUP : OFF : : : : 80GB 80 % 19 % 1% AA BB C 1 2 3 CAUTION : WHEN THE AREA SETTING IS CHANGED, THE WHOLE AREA WILL BE INITIALIZED ! 1 PICTURE QUALITY: NORMAL Picture quality can be selected from five options.

(The recording speed changes in accordance with the picture quality selected.) B Setting screen for alarm recording area picture quality, recording speed, etc. <ALARM REC MODE SET> PICTURE QUALITY : SUPER FINE AUDIO RECORDING : ON ALARM RECORDING : ENABLED ALARM INTERLEAVE : ONLY PROGRAM GROUP : OFF REC RATE :@ 0.1FPS, DURATION: 40SEC PRE-ALARM RECORDING : ON REC RATE :@ **** FPS, DURATION: *** => (01010 ALARMS CAN BE RECORDED) ALARM TRIGGER : ALARM 2 AUDIO RECORDING: Can be set to ON or OFF. 3 REC RATE: Shows the recording interval and the recording time. Refer to the recording speed table for further details. 1 2 4 3 4 ALARM RECORDING: Can be set to ON or OFF. When alarm recordings are to be made, select a setting such as ENABLED for the OFF setting. The recording speed and alarm duration will be displayed English 11 BUILT-IN HARD DISK Recording speed tables (The recording time may vary depending on the images being recorded.) These recording speed tables show the recording times for various picture quality and frame/field settings when recording in the normal recording area of the hard disk (80 GB).

They do not include audio recording settings. The recording times for the normal recording area and the alarm recording area represent the recording time values given in the recording speed tables, multiplied by the percentages for the normal recording area and alarm recording area that have been set using the recording area setting menu commands. When recording with an 80-GB hard disk at 100% capacity Field recording Recording Rate (field/sec) Recording Cycle (FPS) BASIC 15 kB NORMAL 22 kB RECORDING TIME ENHANCED 30 kB FINE 40 kB SUPER FINE 56 kB 60.00 30.00 20.00 15.00 10.00 7.50 6.00

5. 00 4.29 3.75 3.33 3.00 2.

73 2.31 2.00 1.67 1.43 1.

25 1.11 1.00 0.50 0.33 0.25 0.20 0.10 0.05 0.03 2 3 5 7 10 13 17 20 23 27 30 33 37 43 50 60 70 80 90 100 200 300 400 500 1000 2000 3000 21H 42H 63H 85H 127H 170H 212H 255H 297H 340H 382H 425H 468H 553H 638H 765H 893H 1021H 1148H 1276H 2553H 3829H 5106H 6382H 12765H 25531H 38296H 15H 30H 45H 60H 90H 120H 150H 180H 210H 241H 271H 301H 331H 391H 452H 542H 632H 723H 813H 904H 1808H 2712H 3616H 4521H 9042H 18084H 27126H 11H 22H 33H 45H 67H 90H 113H 135H 158H 180H 203H 226H 248H 293H 339H 406H 474H 542H 610H 678H 1356H 2034H 2712H 3390H 6781H 13563H 20345H 8H 16H 24H 32H 49H 65H 82H 98H 115H 131H 147H 164H 180H 213H 246H 295H 345H 394H 443H 493H 986H 1479H 1972H 2466H 4932H 9864H 14796H 6H 12H 18H 24H 37H 49H 62H 74H 87H 99H 112H 124H 137H 162H 187H 224H 261H 299H 336H 374H 748H 1122H 1496H 1870H 3741H 7483H 11224H The tables below are recording time tables provided for reference if the total capacity of the hard disk has been increased to 160 GB.

(Contact the place of purchase for details on increasing the capacity of the hard disk.) When recording with a 160-GB hard disk at 100% capacity Field recording Recording Rate (field/sec) Recording Cycle (FPS) BASIC 15 kB NORMAL 22 kB RECORDING TIME ENHANCED 30 kB FINE 42 kB SUPER FINE 56 kB 60.00 30.00 20.00 15.00 10.00 7.50 6.00 5.00 4.

29 3.75 3.33 3.00 2.73 2.

31 2.00 1.67 1.43 1.25 1.

11 1.00 0.50 0.33 0.25 0.20 0.10 0.05 0.03 2 3 5 7 10 13 17 20 23 27 30 33 37 43 50 60 70 80 90 100 200 300 400 500 1000 2000 3000 42H 85H 127H 170H 255H 340H 425H 510H 595H 680H 765H 851H 936H 1106H 1276H 1531H 1787H 2042H 2297H 2553H 5106H 7659H 10212H 12765H 25531H 51062H 76593H 30H 60H 90H 120H 180H 241H 301H 361H 421H 482H 542H 602H 663H 783H 904H 1085H 1265H 1446H 1627H 1808H 3616H 5425H 7233H 9042H 18084H 36168H 54253H 22H 45H 67H 90H 135H 180H 226H 271H 316H 361H 406H 452H 497H 587H 678H 813H 949H 1085H 1220H 1356H 2712H 4069H 5425H 6781H 13563H 27126H 40690H 16H 32H 49H 65H 98H 131H 164H 197H 230H 263H 295H 328H 361H 427H 493H 591H 690H 789H 887H 986H 1972H 2959H 3945H 4932H 9864H 19728H 29592H 12H 24H 37H 49H 74H 99H 124H 149H 174H 199H 224H 249H 274H 324H 374H 448H 523H 598H 673H 748H 1496H 2244H 2993H 3741H 7483H 14966H 22449H Reference: 24H = 1 day, 168H = 1 week, 720H = 1 month, 8760H = 1 year 12 English BUILT-IN HARD DISK When the power for the digital video recorder is turned on, the operating display appears at the top of the monitor screen. This operating display shows information which is essential for operation, such as the date, time and picture quality.

1 Operating display 02 0000 REPEAT EN A 01-01-02 00:00:00 REC ALARM 2 3 02 0000 REPEAT EN A 01-01-02 00:00:00 4 56 7 8 REC ALARM REC ALARM 0000 REPEAT EN A 01-01-02 00:00:00 02 Operating display Insert the power cord into a wall outlet and turn on the power.



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The POWER indicator illuminates, and after approximately 15 seconds the EXIT/OSD indicator illuminates. The camera images then appear on the monitor screen and the operating display appears at the top of the screen. Note: If you press the EXIT/OSD button repeatedly, you can change the display position for the operating display or make it disappear. 4 Amount of recording area remaining "REPEAT" appears when overwriting is enabled. Furthermore, if overwriting has been disabled (OVERWRITE: OFF) for the normal recording area and the alarm recording area, the amount of space remaining appears as a percentage. You can change the amount of recording area remaining using the RECORDING AREA SET menu item. (See page 51.) 5 Picture quality display This shows the picture quality for images that are recorded on the hard disk. The default setting is EN (Enhanced).

The display changes when the picture quality is changed using the NORMAL REC MODE SET menu item. · BA: Basic · NO: Normal · EN: Enhanced · FI: Fine · SF: Super Fine 1 Camera number display This displays the number of the camera that is currently being played back or monitored. 2 Operating symbol display These symbols appear during recording and playback. REC : Recording e : Fast forward c : Playback f : Rewind d : Reverse playback hc : Slow playback h : Stopped dh : Slow reverse playback Note: If recording and playback are being carried out at the same time, the playback symbol (c) appears. 6 Audio recording display "A" appears when audio recording is enabled.

See page 54 for details on the audio recording settings. 7 Date display When the digital video recorder is first turned on, the date appears as 01-01-02 (month, day, year). Make sure that you use the menus to set the correct date. 3 Alarm display and alarm number display When an alarm setting is made using the ALARM REC MODE SET menu item, The following display appears in the alarm display. However, the PRE display appears when pre-alarm recording has been set.

When an alarm occurs, the PRE is replaced by ALARM and the number of alarms also appears. The alarm display shows the cumulative number of alarms. · If ALARM REC MODE SET is set: "ALARM" appears. The "ALARM" display flashes during alarm recording. · If PRE ALARM RECORDING is set: "PRE" appears. · When playing images from the archive area: ARCHIV appears. · When an external alarm is received: "EA" flashes to the left of the camera number. · When a motion sensor alarm is received: "SA" flashes to the left of the camera number. 8 Time display When the digital video recorder is first turned on, the time appears as 00:00:00, and the time starts counting after the date has been set. The digital video recorder uses the date and time to control recording and playback, so if the date and time have not been set, the correct images cannot be retrieved.

Make sure that you use the menus to set the correct time. If this is not set, recording will not be possible. Note: During recording with this unit, playing back, copying and transferring pictures is possible. However, because of the recording priority the response of the other operations becomes slower. English 13

VIEWING CAMERA IMAGES Viewing a single-screen image 4 STILL ZOOM Still image Single-screen Zoom Setting the camera image to single-screen display Enlarging images 1 Press a camera select button (example: 2). The camera 2 image appears as a single-screen. 1 Press the ZOOM button. The images will be enlarged. ZOOM 2 Pausing images Note: If you set a zoom frame, the area of the image inside the zoom frame will be enlarged. (See page 15.) 1 Press the STILL button. The image will be paused. STILL If you press the camera select button while zooming, the image will be easier to see due to the movement of the subject. The following changes will occur if you press the camera select button repeatedly. · An image with little movement (almost a still image) Large subjects become clearer and moving subjects appear a little rough.

2 To cancel the still image, press the STILL button once more. Pausing will be canceled and normal images will appear. STILL 2 Enlarged image is a little rough Subject becomes clearer · Note: If you press the ZOOM button while the image is paused, the still image will be enlarged. To return to the original still image, press the ZOOM button once more. STILL ZOOM An image with large movement (normal viewing) The image of a moving subject becomes clearer and subjects with little movement appear a little rough.

4 Enlarged image is a little rough Subject becomes clearer Note: If you press some other camera select button while zooming is in progress, the zooming will be canceled and the display will change to a single-screen image for the selected button. 14 English VIEWING CAMERA IMAGES 2 To return an enlarged image to normal image display, press the ZOOM button once more. The zoom will be canceled and normal images will appear. ZOOM 4 Move the zoom frame to the section of the image to be enlarged. · If you turn the jog dial clockwise, the zoom frame will move to the right. If you turn it counterclockwise, the zoom frame will move to the left. · If you turn the shuttle dial clockwise, the movement direction changes to vertical movement. If you then turn the jog dial clockwise, the zoom frame will move down, and if you turn it counterclockwise, the zoom frame will move up. Move the zoom frame to the section of the image to be enlarged. Example: To zoom in on the camera 2 image and move the zoom frame You can select the zoom position by means of the zoom frame which appears on the screen.

The zoom frame is set initially at the middle of the screen. 1 Press camera select button 2. The camera 2 image will appear in a single-screen display. 5 Press camera select button 2 once more. The image in the repositioned zoom frame will be enlarged. 2 2 2 Press the ZOOM button. The images will be enlarged. ZOOM Note: If you press the STILL button while the images are being zoomed, an enlarged still image will be displayed. 6 To return an enlarged image to normal image display, press the ZOOM button once more. The zoom will be canceled and normal images will appear.

ZOOM 3 Press and hold camera select button 2 for about 3 seconds or more. The zoom will be canceled and the normal image will appear, and the zoom frame (G) will appear on the screen. 2 Note: If the zoom frame remains on the screen for about 10 seconds without being adjusted, the screen will return to zoom display. To make the zoom frame reappear, press and hold camera select button 2 again for 3 seconds or more. English 15 VIEWING CAMERA IMAGES Viewing multiple-screen images Images from the cameras that are connected to the digital video recorder can be displayed in several split-screen formats.



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Furthermore, the images from each camera can be displayed in any position within the split screen. (See page 81.) MULTI 9-screen display MULTI 6-screen display QUAD 4-screen display PLUS 16-screen display 13-screen display Viewing images as 9-screen or 16-screen displays Plus screen viewing The plus screen allows you to display the images from each camera as a quarter-screen display in the lower right corner of the split-screen display. In addition, images being recorded can be played back in the same position. 1 Press the MULTI button.

The display switches between 9-screen and 16-screen displays each time the MULTI button is pressed. To return to a single-screen display, press a camera select button. For the DSR-3009 model, only the 9-screen display is available with no switching. MULT 1 Press the PLUS button. The display changes to show a 13-screen display with a plus screen as a quarter-screen picture in the lower-right corner. For the DSR-3009 model, a 6-screen display appears. PLUS Viewing images as a 4-screen display Plus screen 1 Press the QUAD button. Images appear as a 4-screen display. QUAD 2 Press the MULTI button. The display switches between 13-screen and 6-screen each time the MULTI button is pressed.

MULT 2 Press the QUAD button once more. Camera images are switched in 4-screen display units (1 4, 5 8, 9 12, 13 16) each time the button is pressed. To return to a single-screen display, press a camera select button. For the DSR-3009 model, a 4-screen display of images from cameras 1 4, 5 8, or 9 3 will appear each time the button is pressed. QUAD 3 Press a camera select button (example: 12). The images from the selected camera will be displayed in the plus screen. To cancel the plus screen, press the PLUS button once more. For the DSR-3009 model, press a camera select button numbered 9 or less. 12 16 English VIEWING CAMERA IMAGES Example: To display images from camera 2 in the plus screen Record the images on the hard disk beforehand. (See page 20.

) Viewing automatically switching images The camera images are switched automatically in the order that has been set using the SEQUENCE settings. (See page 82.) 1 Press the PLAY/STOP button. All screens will start playing back. SEQUENCE PLAY/STOP Automatic switching of single-screen display Automatic switching of 4-screen display 2 Press the PLUS button.

The plus screen is displayed. PLUS Automatically switching of the single-screen images 1 Switch to single-screen display, and then press the camera select buttons to select the camera for automatic switching (example: 1). The camera select buttons for the cameras that were selected are stored in memory. The indicator will illuminate when the next button is pressed. 1 3 Press the PLUS button once more.

The plus screen continues to show the playback images, and the other split-screen displays show images in monitoring mode. PLUS 2 Press the SEQUENCE button. SEQUENCE 4 Press camera select button 2. The plus screen changes to show the images being recorded by camera 2. 2 3 To cancel automatic switching, press the SEQUENCE button once more, or press one of the individual camera select buttons. Automatic switching will be canceled and normal images will appear. SEQUENCE Note: · See page 20, 24 for further details on recording and playback. · To stop playback, press the PLAY/STOP button once more. The display returns to the plus screen. English 17 VIEWING CAMERA IMAGES Automatically switching of the 4-screen images 1 Press the QUAD button.

Images appear as a 4-screen display. QUAD 2 Press the SEQUENCE button. Camera images will be switched automatically in 4-screen display units (1 4, 5 8, 9 12, 13 16). For the DSR-3009 model, images from cameras 1 4, 5 8, or 9 3 will be switched automatically. SEQUENCE 3 Press the SEQUENCE button once more to return to the 4-screen display. Automatic switching will be canceled and 4-screen display will be restored. SEQUENCE Automatically switching of the plus screen image 1 Press the PLUS button. The plus screen is displayed. PLUS 2 Press the SEQUENCE button. The camera images in the plus screen will be switched automatically.

SEQUENCE 3 Press the SEQUENCE button once more to return to the plus screen. Automatic switching will be canceled and the plus screen will appear. To cancel the plus screen, press the PLUS button once more. SEQUENCE 18 English VIEWING CAMERA IMAGES Using two monitors for monitoring If you connect a monitor to the MON2 output terminal on the rear panel, you can display the images from each camera as single-screen images or show an automatic switching screen on monitor 2, even while the main monitor is showing a split-screen display. In addition, the camera images can be shown in a single-screen display during playback, and when an alarm occurs, the alarm camera images can be automatically sent to monitor 2.

The default setting is automatic switching of a single screen. Operating monitor 2 Press the MON2 button. The MON2 indicator flashes. MON2 Displaying single-screen alarm images on monitor 2 When an alarm is received, the alarm images will be displayed on monitor 2 as single-screen images. External alarm Camera number EA 04 EN 16-06-02 11:18:13 Displaying single-screen camera 4 images on monitor 2 Press camera select button 4.

The images from camera 4 appear on monitor 2 in a single-screen display. SEQUENCE Main monitor Note: If alarm images are being displayed on monitor 2, change the "MON.2 DISPLAY" setting in the (ALARM OPERATION SET) menu to "ON". (See page 66.) 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 CLE AR SHUTTLE JOG Canceling monitor 2 display Press the MON2 button once more. The MON2 indicator switches off. Monitor 2 Monitor 2 MON2 Changing monitor 2 from single-screen display to automatic switching Press the SEQUENCE button. The camera images being displayed on monitor 2 will switch automatically. To cancel automatic switching, press the SEQUENCE button once more. SEQUENCE Main monitor 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 Monitor 2 CLE AR SHUTTLE JOG Monitor 2 English 19 RECORDING IMAGES IN THE NORMAL RECORDING AREA Normal recording Images can be recorded in the normal recording area while they are being monitored.

If the time has not been set, the digital video recorder cannot make recordings. Be sure to set the time. (See page 44.) Monitored images are recorded. 1 Setting the time Press the MENU button to display the LANGUAGE/CLOCK SET menu, and set the date and time. After the setting has been made, press the EXIT/OSD button, the date and time appear in the operating display. (See page 44.) MENU <LANGUAGE/LANGUE/IDIOMA> ENGLISH <CLOCK SET> 01-01-2002 TUE 00:00:00 <DAYLIGHT SAVING> MODE : USE WEEK MONTH TIME ON 1ST-SUN 04 02:00 OFF LST-SUN 10 02:00 <EXT.



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CLOCK SET> ADJUST.TIME 01:00 3 When an alarm is received, pre-alarm recording stops automatically and the alarm images are recorded. The "PRE" disappears from the operating display, "ALARM" flashes and the ALARM indicator flashes.

SA 01 0001 REPEAT EN 06-10-02 09:30:15 REC ALARM ALARM 2 Set pre-alarm recording. Press the MENU button to display the ALARM REC MODE SET menu. Set ALARM RECORDING to the desired alarm recording setting (example: ENABLED). The setting for PRE-ALARM RECORDING will be set to "OFF", so change it to "ON". (See page 62.

) Press the EXIT/OSD button to return to the normal screen. "PRE" appears in the operating display, the ALARM indicator illuminates and pre-alarm recording starts (the REC mark does not appear). The same monitored image as in the normal recording area is recorded repeatedly in the alarm recording area. Recording onto the hard disk proceeds automatically (default setting) according to the following settings. The settings can be changed between long-period recording and high-quality recording in five steps. (See page 59.) · Hard disk recording areas: Normal recording area: 80% Alarm recording area: 19% Archive area: 1% · Picture quality: EN (Enhanced) · Recording speed: 10 FPS (67H) REC/STOP ALARM REC PRE 0000 REPEAT EN English *** <ALARM REC MODE SET> PICTURE QUALITY : SUPER FINE AUDIO RECORDING : ON ALARM RECORDING : ENABLED ALARM INTERLEAVE : ONLY PROGRAM GROUP : OFF REC RATE: @ 0.1FPS, DURATION: 40SEC PRE-ALARM RECORDING : ON REC RATE:@ *** FPS, DURATION: *** => (01010 ALARMS CAN BE RECORDED) ALARM TRIGGER : ALARM 01 05-10-02 18:10:25 23 PLAYING BACK RECORDED IMAGES The digital video recorder can play back recorded images in the normal recording area (normal recording, timer recording). Playback operations ALARM Normal recording area b Skipping to the previous or next alarm PLAY/STOP 4 STILL b Playback in a single screen (See page 25.) b Still image (See page 26.

) ZOOM b Frame advance (forward/reverse) (See page 26.) b Slow playback and fast forward/fast rewind playback (See page 25.) MULT b Zooming images (See page 26.) b Playback in multiscreen display (See page 27.) SHUTTLE HOLD SHUTTLE HOLD Fast forward/fast rewind and reverse playback (See page 25.) Locking speed for fast forward/rewind playback (See page 25.) Releasing speed lock Normal playback · When playing back recordings for the first time: The recorded images will be played back from the beginning. · When playing back for the second or subsequent time: Playback will start from the point where the last playback session ended. (Starting point for first playback) Ending point (Starting point for second playback) Ending point (Starting point for third playback) Ending point 24 English PLAYING BACK RECORDED IMAGES Playback in a single screen Fast forward/fast rewind and reverse playback 1 Press the PLAY/STOP button. c appears in the operating display and the images recorded in the normal recording area are played back. You can press the camera select buttons to select the camera images to be played back. PLAY/STOP 1 Turn the shuttle dial clockwise (or counterclockwise) during playback. When the shuttle dial is turned clockwise, e appears in the operating display and fast forward playback starts. If it is turned counterclockwise, f appears in the operating display and rewind playback starts. When you release the shuttle dial, normal playback resumes. 01 EN 11-17-02 02:38:00 4 EN 01 10-26-02 11:02:50 04 EN 10-27-02 13:38:33 2 Changing the playback speed (Fast forward/slow playback) 3 2 2 Note: · Image playback starts from the point (time) that the recording started. If there is no starting position, or if a reset has been made, the oldest recorded image is played back. · When playback is finished, playback mode is automatically paused. The pause (h) symbol appears in the operating display and the STILL indicator illuminates. · If playback has been carried out at least once, playback will start from the position where the last playback session ended. 1 Turn the jog dial clockwise. Fast forward playback starts and e appears in the operating display. 2 Turn the jog dial counterclockwise. Slow playback starts and hc appears in the operating display. 3 Return to normal playback. Turn the jog dial clockwise. c appears in the operating display. (Fast rewind playback) 1 2 SHUTTLE LOCK 2 Press the PLAY/STOP button again. Playback stops. PLAY/STOP EN 04 11-20-02 04:00:00 4 3 1 Turn the shuttle dial counterclockwise slightly (fix at fast rewind) d will be displayed, so press the SHUTTLE HOLD button.

The SHUTTLE HOLD indicator will illuminate and the rewind playback speed will be fixed at the current speed. Note: If playback is started just as recording is being carried out, recording will have priority, so that the playback images may be paused momentarily. 2 Turn the shuttle dial counterclockwise again. The speed becomes faster than for normal rewind playback, and f appears in the operating display. 3 Turn the jog dial clockwise. e appears in the operating display. 4 Return to normal playback. Turn the jog dial counterclockwise. c appears in the operating display. English 25 PLAYING BACK RECORDED IMAGES Zooming the image during playback Frame advance (forward/reverse) 1 Press the ZOOM button during playback.

The images will be enlarged. ZOOM EN 01 11-17-02 02:36:00 1 Turn the jog dial clockwise (or counterclockwise) in still mode. Turn the jog dial clockwise to advance the still image by one frame (one field). Turn it counterclockwise to rewind the still image by one frame (one field). 01 EN 11-17-02 02:50:08 2 To return an enlarged image to normal image display, press the ZOOM button once more.

The zoom will be canceled and normal images will appear. ZOOM EN 01 11-17-02 02:36:10 Note: If the jog dial is turned quickly, the frame feed speed also increases. However, if the speed is too fast, the images will stop. Play back the images at an appropriate speed. Note: You can also change the zoom position. For details on this operation, refer to "Enlarging images" (See page 15). Viewing still images 1 Press the STILL button during playback. h appears in the operating display and a still image is displayed. STILL EN 01 11-17-02 02:38:00 During the following operations the picture may appear distorted or momentarily frozen. This is normal and not a malfunction. · During the continuous playback from the normal and the alarm recording area, the picture may be distorted when the recording area is switched. · When playing back during an alarm recording, during continuous playback from the normal and alarm recording area, during normal playback or when using the fast forward/rewind playback the picture may appear momentarily frozen.



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