INSTRUCTION MANUAL

EDSR-900

9 Channel Duplex Digital Video Recorder

EDSR-1600

16 Channel Duplex Digital Video Recorder

V1.02

EverFocus®

⚠ **CAUTION**
DO NOT REMOVE COVER. NO USER SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

⚠ **WARNING**
TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

Safety Precautions

⚠
? Refer all work related to the installation of this product to qualified service
personnel or system installers.

⚠
? Do not block the ventilation opening or slots on the cover.

⚠
? Do not drop metallic parts through slots.This could permanently damage
the appliance. Turn the power off immediately and contact qualified service
personnel for service.

⚠
? Do not attempt to disassemble the appliance.To prevent electric shock,
do not remove screws or covers. There are no user-serviceable parts
inside. Contact qualified service personnel for maintenance. Handle the
appliance with care. Do not strike or shake, as this may damage the
appliance.

⚠
? Do not expose the appliance to water or moisture, nor try to operate it in
wet areas. Do take immediate action if the appliance becomes wet.
Turn the power off and refer servicing to qualified service personnel.
Moisture may damage the appliance and also cause electric shock.

⚠
? Do not use strong or abrasive detergents when cleaning the appliance
body. Use a dry cloth to clean the appliance when it is dirty. When the
dirt is hard to remove,use a mild detergent and wipe gently.

⚠
? Do not overload outlets and extension cords as this may result in a risk of
fire or electric shock.

⚠
? Do not operate the appliance beyond its specified temperature, humidity
or power source ratings. Do not use the appliance in an extreme
environment where high temperature or high humidity exists. Use the
appliance at temperature within 0ºC ~ +40ºC and a humidity below 90%.
The input power source for this appliance is AC100~240V

Safety Precautions

⚠

The lightning flash with an 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 presence of important operating and maintenance(servicing)instructions in the literature accompanying the appliance.

⚠

Warning :
To prevent fire or shock hazard, do not expose units not specifically designed for outdoor use to rain or moisture.

⚠

Attention:
Installation should be performed by qualified service personnel only in accordance with the National Electrical Code or applicable local codes.

⚠

Power Disconnect:
Units with or without ON-OFF switches have power supplied to the unit whenever the power code is inserted into the power source; however, the unit is operational only when the ON-OFF switch is in the ON position.
The power cord is the main power disconnect for all units.

⚠

AC100~240V Power Cords

⚠

Warning:
Electrostatic-sensitive device. Use proper CMOS/MOSFET handing precautions to avoid electrostatic discharge.

UNPACKING
Unpack carefully.
This is electronic equipment and should be handled carefully.
Check to ensure that the following items are included;

- •1. Digital Video Recorder unit
- •2. User's manual
- •3. Power Cord
- •4. HDD tray key and screws
- •5 Alarm I/O board

If an item appears to have been damaged in shipment, replace it properly in its carton and notify the shipper.

⚠

Do not place on uneven or unstable work surfaces. Seek servicing if the casing.

CE

Note:
This is a class A product. In a domestic environment this product may cause radio interference In which case the user may be required to take adequate measures.

Note:
Before installing and using this unit, please read this manual carefully. Be sure to keep it handy for later reference.
The information in this manual was current when published. The manufacturer reserves the right to revise and improve its products. All specifications are therefore subject to change without notice.

Important Safeguards

⚠

Read Instruction---All the safety and operating instructions should be read before the init is operated

⚠

Retain Instructions---The safety and operating instructions should be retained for future reference.

⚠

Heed Warnings—All warnings on the unit and in the operating instructions should be adhered to.

⚠

Follow Instructions—All operating and use instructions should be followed

⚠

Cleaning—Unplug the unit from the outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning

⚠

Attachments—Do not use attachment not recommended by the product manufacturer as they may cause hazards.

⚠

Water and Moisture—Do not use this unit near water-for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, near a swimming pool, in an unprotected outdoor installation, or any area which is classified as a wet location.

⚠

Servicing—Do not attempt to service this unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

⚠

Power Cord Protection—Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, playing particular attention to cords and plugs, convenience receptacles, and the point where they exit from the appliance.

⚠

Object and Liquid Entry—Never push objects of any kind into this unit through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock, Never spill liquid of any kind on the unit.

Table of Contents

1. Product Overview

The EDSR-900 / EDSR1600 Duplex Digital Video Recorder (DVR) a full-featured DVR designed specifically for use in security industry.
The DVR incorporates all the benefits of digital video recording, is simple to install, and operates just like a VCR.
Highly efficient compression technology and superior resolution of recorded images make the DVR stand out from the competition as the best choice for security surveillance.
The 16 (in) x 5 (out) Matrix Outputs make it powerful for 5 call monitor outputs to be set as you wish.
The real time audio recording at any video recording speed that makes it as perfect as your security demand.

1.1 Main Features

- ✍ Easy-to-use control panel with common VCR and Multiplexer functions
- ✍ Shuttle/Jog dial for picture-by-picture or fast/slow viewing
- ✍ No tapes to manage, clean or replace
- ✍ Instant retrieval of stored video
- ✍ On-screen setup menu and system timer
- ✍ Ethernet TCP/IP connectivity for remote viewing and controlling
- ✍ Pre-Alarm recording
- ✍ Built-in M-JPEG compression/decompression with configurable video quality
- ✍ Programmed with various time-lapse speeds
- ✍ Two 3.5" IDE Type Hard Disks for storage with Hot-Swap trays
- ✍ RS232 and RS485 for Remote Control
- ✍✍ IR remote control (optional)
- ✍ Real-Time Live Display for all cameras
- ✍ Variable recording speeds up to 60/50 fields per second for NTSC/PAL
- ✍ Alarm- and motion activated recording
- ✍ Data export to compact flash card
- ✍ 2 channel real time audio recording capabilities

1.2 Specifications

Video Format	NTSC/PAL
Video Input	9 (EDSR900) / 16 (EDSR1600) camera inputs (BNC),1Vp-p/75ohm
Video Output	1 BNC video out (1Vp-p/75 ohm) for Main Monitor 1 S-Video out Mini DIN for Main Monitor 5 BNC video out (1Vp-p/75 ohm) for Matrix / CALL Monitor output 9 (EDSR900) / 16 (EDSR1600) video out (1Vp-p/ 75 Ohm)for looping
Video Compression	M-JPEG
Recording Resolution	720x484 (NTSC); 720x576 (PAL)
Compact Flash Memory	built-in Compact Flash card slot
Alarm Input	9 (EDSR900) / 16 (EDSR1600) alarm inputs, 25 pin Sub-D
Alarm Output	1 alarm output
Video Display modes	EDSR-900: Full, 4, 6, 7, 8, 9, PIP and 2x zoom for Live and Playback EDSR-1600: Full, 4, 6, 7, 9, 10, 13, 16, PIP and 2x zoom for Live and Playback
Video Loss Detection	Yes
Ethernet	10BaseT Ethernet, RJ45 connector
Event Log	Yes
Hard Disk Storage	Two 3.5" IDE type, hot- swappable
Recording Mode	Continuous, Timer Schedule, Alarm- or Motion Recording
Recording Rate	Up to 60/50 fields per second for NTSC/PAL
Playback Rate	Up to 60/50 fields per second for NTSC/PAL
Playback Search	By Date/Time, Event, Segment
Setup	On screen display setup (OSD)
User Interface	Menu Driven
User Input Device	Front Panel Keypad
Timer	Built-in real time clock
Watch Dog Timer	Yes
RS-232	9-pin female D-Sub
RS485	2 x RJ45 Socket
Audio	2 x Audio In / Out Cinch 500mV max., 10 KOhm impedance
Dimension	430mm (W) x 88mm (H) x 300 (D)
Power Consumption	40W max.
Power Source	AC100~240V
Operating Temperature	0°C ~ 40°C

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2. Back Panel Connections
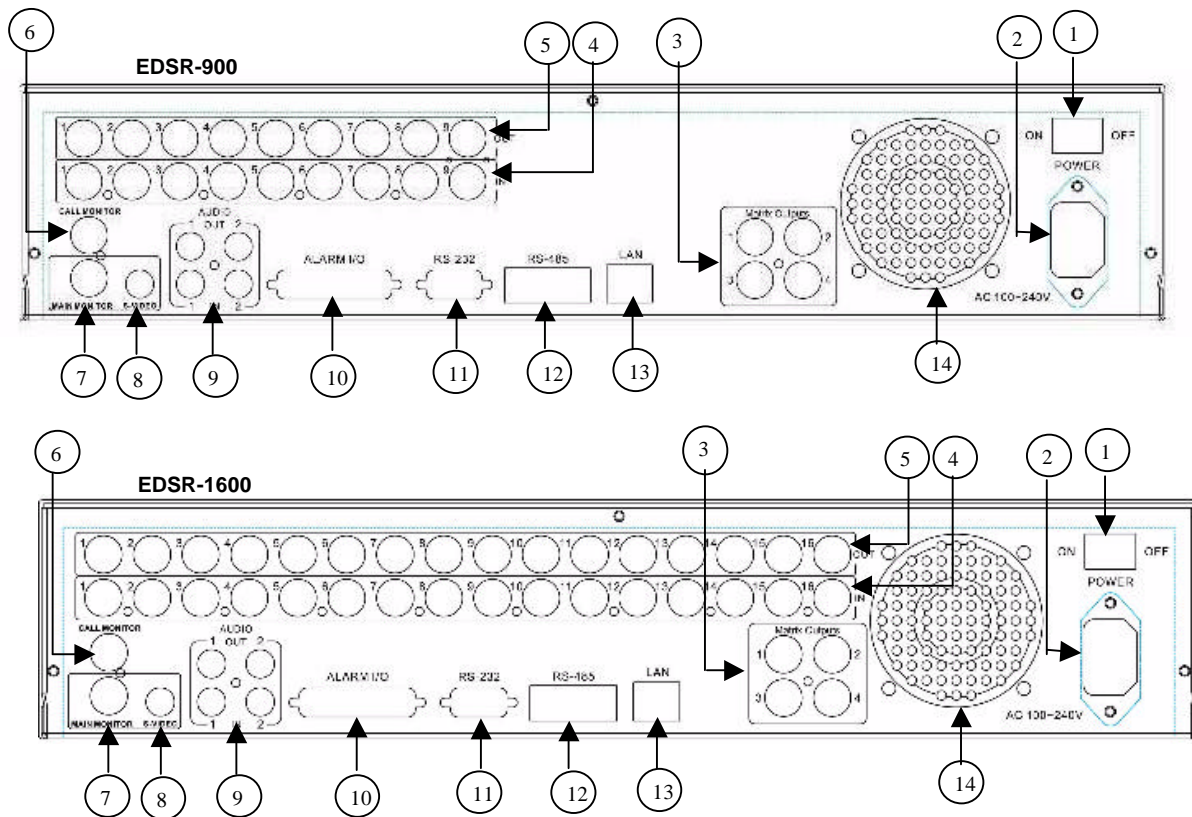
①	**ON/OFF:**	Main on/off switch.
②	**AC100~240V**	power socket.
③	**Matrix Outputs:**	These connectors are used for additional 4 programmable Call monitors. With these outputs, there are totally 5 programmable call monitors. These monitors can only display full screen as regular call monitor.
④	**VIDEO IN:**	BNC-sockets for composite signal video inputs, automatic 75 Ohm termination (EDSR-900: 1 ~ 9, EDSR-1600: 1 ~ 16).
⑤	**VIDEO OUT:**	Loop through video outputs for each input channel. (EDSR-900: 1 ~ 9, EDSR-1600: 1 ~ 16)
⑥	**CALL MONITOR:**	BNC-socket Call (Spot) Monitor, composite signal. (Full screen display only)
⑦	**MAIN MONITOR:**	BNC-socket main monitor, composite signal. Main monitor provides Full sreen, Multiscreen, Setup.
⑧	**S-VIDEO:**	Mini-DIN socket main monitor, S-Video signal. Main monitor provides Full sreen, Multiscreen, Setup.
⑨	**AUDIO IN :**	2 x Cinch socket audio input 500 mV max., 10 KOhm impedance.
	AUDIO OUT:	2 x Cinch socket audio output 500 mV max. at 10 KOhm

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(10) **ALARM I/O: (Refer pin assignment in Appendix-C, Page 44)**

     ALM-INPUT : Normally Open (N.O) or Normally Close (N.C) type alarm sensor input.
               The Alarm Input can be selected as N.O or N.C input in the setup
               menu. When an alarm occurs, alarm recording will automatically start.

     ALM-OUTPUT : Two-way contact relay alarm output. In normal condition, this N.C. contact
               shorted to ALM-COM. In alarm status, it is open between ALM-NC and
               ALM-COM, N.O. is shorted to ALM-COM.

(11) **RS232 connector :** D-Sub 9 pins connector to RS232 ports for remote control.

(12) **RS485 connector :** 2 x RJ-45 connectors for RS-485 remote control, high impedance
                Supported are keyboards KS-KBK, KS-KBJ.
                Maximum units in RS-485 network are 32.
                Following EverFocus products are compatible in RS-485 network:
                - DVR´s   EDSR100H, EDSR100M, EDSR400, EDSR400H,
                                EDSR400M, EDSR900, EDSR1600
                - Keyboards KS-KBJ (with 3 - axis Joystick, DVR and telemetry control)
                              KS-KBK (only DVR control)

(13) **LAN Connector** : RJ-45 LAN connector for internal 10MBit LAN interface.

(14) **FAN:** Cooling fan, do not cover.

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3. System Connection

The installations described below should be made by qualified service personnel or system installers.

Before Installation

Please refer to the following diagram for the system connections.

EDSR 900: Camera 1~9 / EDSR-1600: Camera 1 ~ 16

Alarm In/Out

Audio Input
(camera Audio Out)

Audio Out
(To Speaker)

RS232

Ethernet

RS485

MAIN Monitor

CALL Monitor

Remote Keyboard(s)
KS-KBJ / KS-KBK
(optional)

Matrix Outputs
4 CALL Monitors
(Optional)

5
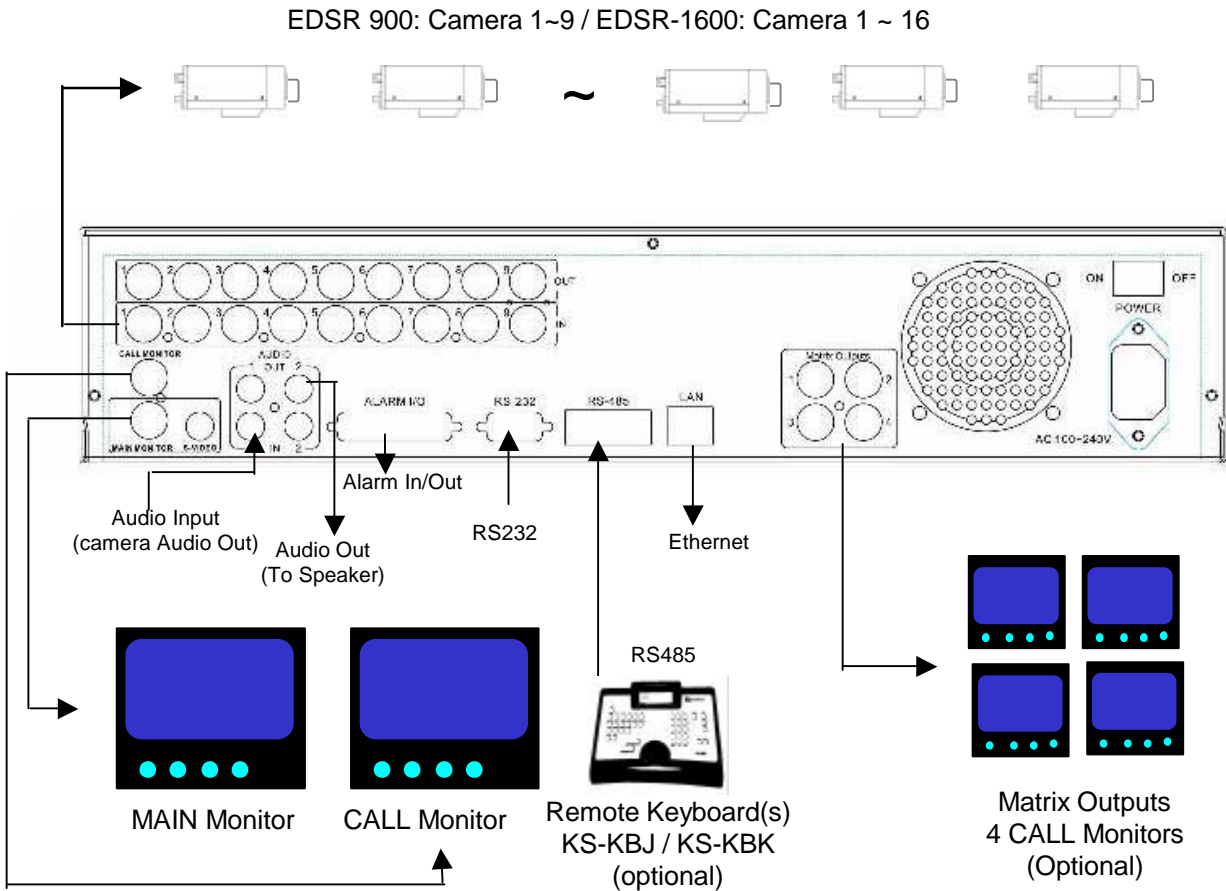
4. Front Panel Keypads

EDSR-900

EDSR-1600
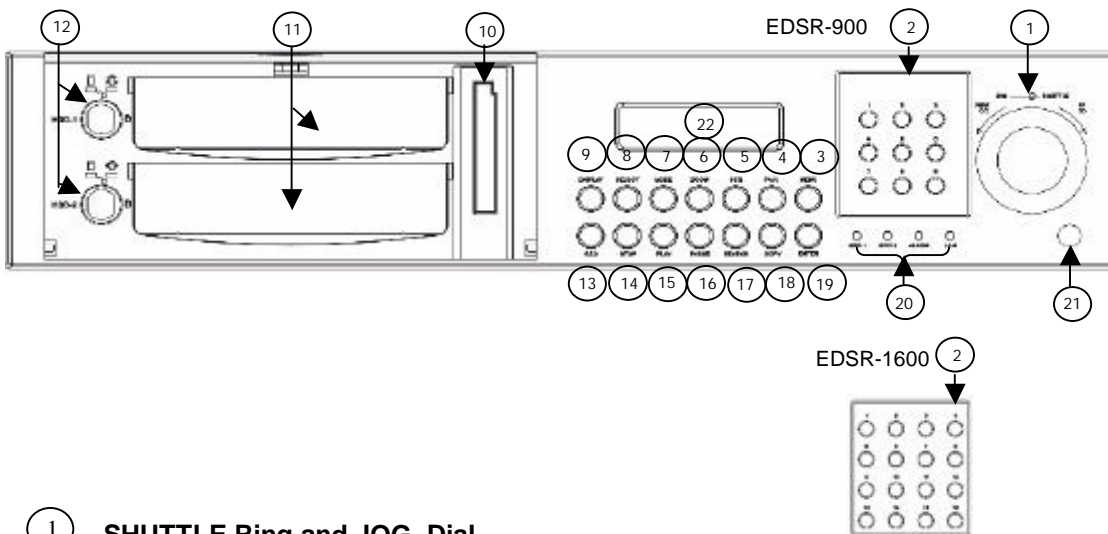
① **SHUTTLE Ring and JOG Dial**

SHUTTLE : In Playback mode, turn the shuttle ring to fast forward/rewind the picture (600X maximum). In Pause mode, turn the shuttle dial to slow forward/rewind the picture (1/32 maximum).

JOG : In Pause mode, turn the jog dial to step forward/rewind the Picture. In Menu mode turn the jog dial to select options.

② **CHANEL KEYS:**.

Press these keys (EDSR-900: 1 ~ 9, EDSR-1600: 1 ~ 16) to display video image in full screen format, the picture of the corresponding camera will fill the whole screen of the monitor display.

③ **MENU:** Press this key to enter Setup Menu (Please refer to page 9~25 for details).

④ **CALL:** Press this key to show picture of assigned camera to desired call monitor.

⑤ **SEQ :** Press this key to enter the auto sequential switching mode for main monitor.

⑥ **ZOOM**: Press this key while viewing the full screen image to display X2 zoom-in picture. To move the zooming area, use **JOG** to move from left to right. Press **ENTER** for changing vertical / horizontal movement.

⑦ **MODE:** Switch Full, 4, 6, 7, 8, 9, (10, 13 and 16 for EDSR-1600 only), PIP (picture in picture) multiscreen for Live and Playback.

⑧ **SELECT: In Full screen mode:** press this key to pop-up dialog as below:

```
┌─────────────────────────────────┐
│      DISPLAY SETTING MENU       │
│                                 │
│          CHANNEL 01             │
│                                 │
│  BRIGHTNESS  �  ▭             │
│  CONTRAST    ▭    ▭             │
│  COLOR       ▭    ▭             │
│                                 │
│  HIT SELECT TO DISCARD CHANGE   │
│  HIT MENU TO SAVE AND EXIT      │
└─────────────────────────────────┘
```

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In Fullscreen mode this menu allows color adjustment for each video channel, all channels are separately adjustable.

The selected item will show in red color bar. Use **JOG** to increase or decrease the value. Press **ENTER** to confirm and move to next item. After finished setting, press **SELECT** key to discard change or press **MENU** key to save and exit the dialog.

In Multiscreen mode:

In Multiscreen mode the **SELECT** key allows to define cameras in all multiscreen views.

Press **SELECT**. At the upper left camera in multiscreen appears "SELECT".

Use the numeric camera keys to select a camera.

Press **ENTER** to switch in the multiscreen.

Press **SELECT** to exit this setting.

Note: Every camera can be selected only once for a multiscreen view.

⑨ **Display:** Press this key to switch ON/OFF for camera title, date/time and HDD status. Hold this key longer than 2 seconds for displaying the event log list.

⑩ **Compact Flash Card Slot:** Insert a Compact Flash Card for archiving video.

⑪ **Hard Disk Trays: 2 x** Hard Disk holder for 3.5" HDD.

⑫ **HDD locks:** Turn on HDD power and protection from taking out the HDD without authority.

⑬ **REC:** Press this key to start recording.

⑭ **STOP:** Press this key to stop recording or playing back.

⑮ **PLAY:** Press this key to stat playing back recoded picture (Please refer to page 27 for details).

⑯ **PAUSE:** Press this key to pause the playback picture.

⑰ **SEARCH:** Press this key to enter the Search Menu (Please refer page 28~30 for details).

⑱ **COPY:** Under PAUSE or PLAYBACK**,** Press this key to start copying still picture or video stream into Compact Flash card (Please refer page 31~33 for details).

⑲ **ENTER**: Press this key to enter sub-menu or confirm setup. When there is Alarm, Motion or Video Loss occurs, press this key for alarm reset. The Event Log Dialog will show on the display, then follow the instruction to continue.

⑳ **LEDs:** LEDs for HDD1, HDD2 , ALARM and LAN access (from left to right).

㉑ **IR Remote Controller receiver**

㉒ **LCD Panel**: To display Date/Time, Recording/Playback and HDD status.

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5. Operation

(1) Insert a HDD (IDE) for Video Storage

Insert one or two HDD (3.5" IDE) for Video Storage.
The HDD should be set as Cable Select.
(Normally the default setting of HDD is Master)

Note: After hard disk case is inserted into the hard disk tray, be sure to turn the tray key in lock position.Otherwise, HDD will not be detected.

ATTENTION: Changing HDD´s and switching on HDD´s is not allowed in record mode!

(2) Connect cable for video/audio input and video/audio out,

The detail connection is described in SYSTEM CONNECTION**.**

(3) Switch Power On

The LCD panel in the front panel will light when you switch on the power**.**

(4) Press MENU key to enter SET UP MENU.

Once inside the main menu you will find there are 14 set up pages as below:
Selected item will be surrounded by a white block.

MENU

```
MAIN MENU

 CLOCK

TIMER

SEQUENCE

TITLE

COVERT

ALARM

MOTION

RECORD

NETWORK

CONTROL

BUZZER

ARCHIVE

MATRIX

SYSTEM
```

(5) Turn the **JOG** dial clockwise or counter-clockwise to select the item, press **ENTER** key for detail set up for each item.

(6) Press **MENU** again to leave the set up menu.

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6. MENU FLOW

Columns in brackets () only valid for EDSR-1600

■ **CLOCK**
(See page 11)

```
CLOCK SETTING MENU

DATE   : 2003/07/04  FRI
TIME   : 13:01:02

MENU LANGUAGE: ENGLISH
VIDEO SYSTEM: NTSC

VERSION: 0.96 11/23
```

■ **TITLE**
(See page 14)

```
TITLE SETTING MENU

CH  TITLE
1   CH01:_ _ _ _ _
2   CH02:_ _ _ _ _
3   CH03:_ _ _ _ _
4   CH04:_ _ _ _ _
5   CH05:_ _ _ _ _
6   CH06:_ _ _ _ _
7   CH07:_ _ _ _ _
8   CH08:_ _ _ _ _
9   CH09:_ _ _ _ _
(10  CH010:_ _ _ _ _ )
(11  CH011:_ _ _ _ _ )
(12  CH012:_ _ _ _ _ )
(13  CH013:_ _ _ _ _ )
(14  CH014:_ _ _ _ _ )
(15  CH015:_ _ _ _ _ )
(16  CH016:_ _ _ _ _ )
```

■ **MOTION**
(See page 17)

```
CH  OP  SEN   DURATION

1   ON  HIGH  07 SECS
2   ON  HIGH  07 SECS
3   ON  HIGH  07 SECS
4   ON  HIGH  07 SECS
5   ON  HIGH  07 SECS
6   ON  HIGH  07 SECS
7   ON  HIGH  07 SECS
8   ON  HIGH  07 SECS
9   ON  HIGH  07 SECS
(10  ON  HIGH  07 SECS)
(11  ON  HIGH  07 SECS )
(12  ON  HIGH  07 SECS)
(13  ON  HIGH  07 SECS)
(14  ON  HIGH  07 SECS)
(15  ON  HIGH  07 SECS)
(16  ON  HIGH  07 SECS)
```
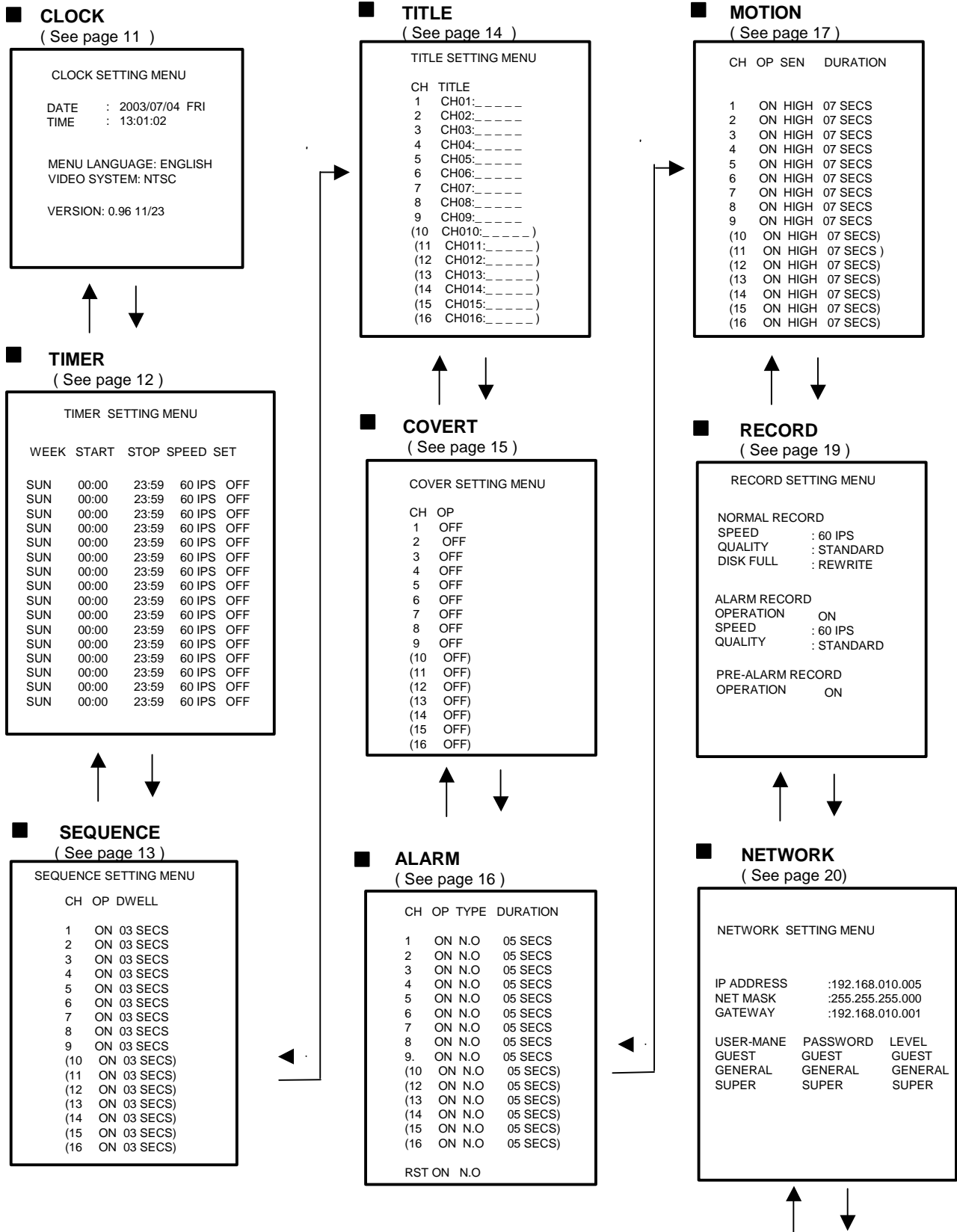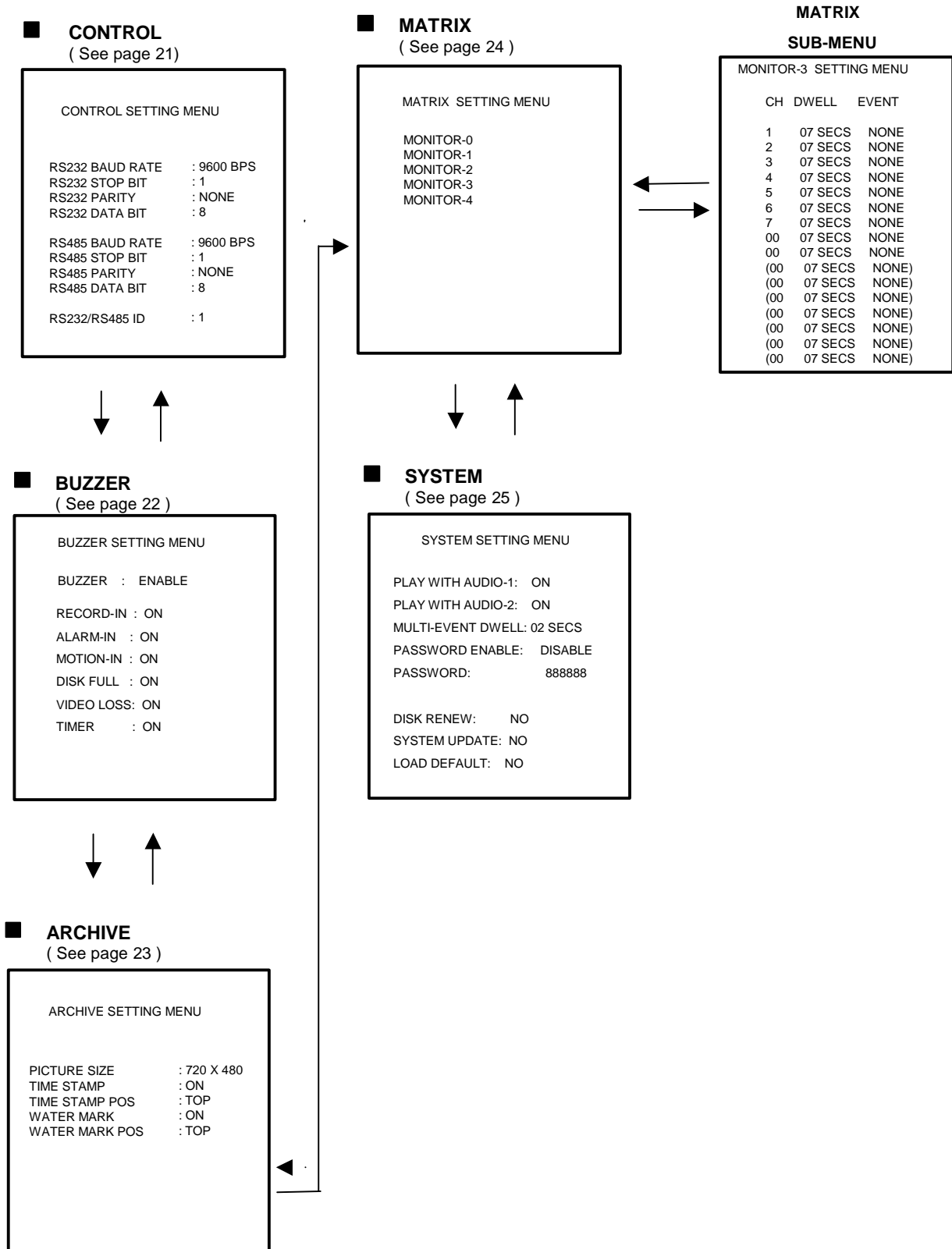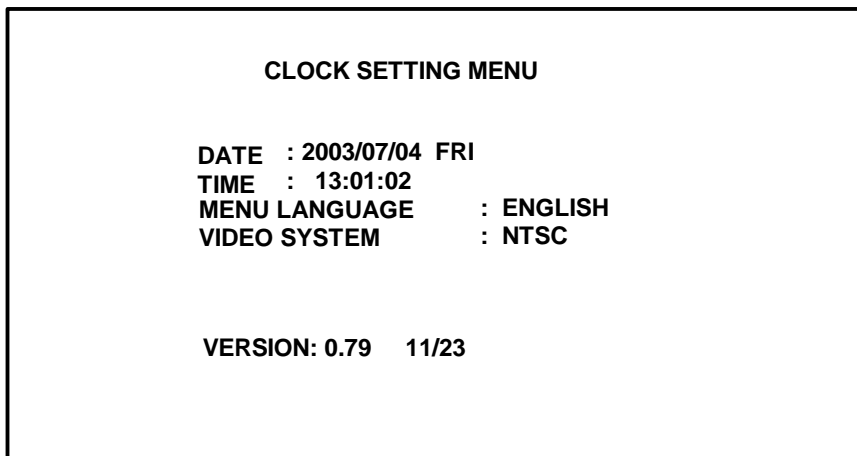
■ **TIMER**
(See page 12)

```
TIMER  SETTING MENU

WEEK  START  STOP  SPEED  SET

SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
SUN   00:00  23:59  60 IPS  OFF
```

■ **COVERT**
(See page 15)

```
COVER SETTING MENU

CH  OP
1   OFF
2   OFF
3   OFF
4   OFF
5   OFF
6   OFF
7   OFF
8   OFF
9   OFF
(10  OFF)
(11  OFF)
(12  OFF)
(13  OFF)
(14  OFF)
(15  OFF)
(16  OFF)
```

■ **RECORD**
(See page 19)

```
RECORD SETTING MENU

NORMAL RECORD
SPEED       : 60 IPS
QUALITY     : STANDARD
DISK FULL   : REWRITE

ALARM RECORD
OPERATION    ON
SPEED       : 60 IPS
QUALITY     : STANDARD

PRE-ALARM RECORD
OPERATION    ON
```

■ **SEQUENCE**
(See page 13)

```
SEQUENCE SETTING MENU

CH  OP  DWELL

1   ON  03 SECS
2   ON  03 SECS
3   ON  03 SECS
4   ON  03 SECS
5   ON  03 SECS
6   ON  03 SECS
7   ON  03 SECS
8   ON  03 SECS
9   ON  03 SECS
(10  ON  03 SECS)
(11  ON  03 SECS)
(12  ON  03 SECS)
(13  ON  03 SECS)
(14  ON  03 SECS)
(15  ON  03 SECS)
(16  ON  03 SECS)
```

■ **ALARM**
(See page 16)

```
CH  OP  TYPE  DURATION

1   ON  N.O  05 SECS
2   ON  N.O  05 SECS
3   ON  N.O  05 SECS
4   ON  N.O  05 SECS
5   ON  N.O  05 SECS
6   ON  N.O  05 SECS
7   ON  N.O  05 SECS
8   ON  N.O  05 SECS
9.  ON  N.O  05 SECS
(10  ON  N.O  05 SECS)
(12  ON  N.O  05 SECS)
(13  ON  N.O  05 SECS)
(14  ON  N.O  05 SECS)
(15  ON  N.O  05 SECS)
(16  ON  N.O  05 SECS)

RST ON  N.O
```

■ **NETWORK**
(See page 20)

```
NETWORK  SETTING MENU

IP ADDRESS      :192.168.010.005
NET MASK        :255.255.255.000
GATEWAY         :192.168.010.001

USER-MANE   PASSWORD    LEVEL
GUEST       GUEST       GUEST
GENERAL     GENERAL     GENERAL
SUPER       SUPER       SUPER
```

Columns in brackets () only valid for EDSR-1600

■ **CONTROL**
(See page 21)

```
CONTROL SETTING MENU


RS232 BAUD RATE     : 9600 BPS
RS232 STOP BIT      : 1
RS232 PARITY        : NONE
RS232 DATA BIT      : 8

RS485 BAUD RATE     : 9600 BPS
RS485 STOP BIT      : 1
RS485 PARITY        : NONE
RS485 DATA BIT      : 8

RS232/RS485 ID      : 1
```

■ **MATRIX**
(See page 24)

```
MATRIX  SETTING MENU


MONITOR-0
MONITOR-1
MONITOR-2
MONITOR-3
MONITOR-4
```

MATRIX

SUB-MENU

```
MONITOR-3  SETTING MENU

CH  DWELL    EVENT

1   07 SECS   NONE
2   07 SECS   NONE
3   07 SECS   NONE
4   07 SECS   NONE
5   07 SECS   NONE
6   07 SECS   NONE
7   07 SECS   NONE
00  07 SECS   NONE
00  07 SECS   NONE
(00  07 SECS   NONE)
(00  07 SECS   NONE)
(00  07 SECS   NONE)
(00  07 SECS   NONE)
(00  07 SECS   NONE)
(00  07 SECS   NONE)
(00  07 SECS   NONE)
```

■ **BUZZER**
(See page 22)

```
BUZZER SETTING MENU

BUZZER  :  ENABLE

RECORD-IN : ON

ALARM-IN  : ON

MOTION-IN : ON

DISK FULL : ON

VIDEO LOSS: ON

TIMER     : ON
```

■ **SYSTEM**
(See page 25)

```
SYSTEM SETTING MENU

PLAY WITH AUDIO-1:  ON

PLAY WITH AUDIO-2:  ON

MULTI-EVENT DWELL: 02 SECS

PASSWORD ENABLE:   DISABLE

PASSWORD:          888888


DISK RENEW:    NO

SYSTEM UPDATE: NO

LOAD DEFAULT:  NO
```

■ **ARCHIVE**
(See page 23)

```
ARCHIVE SETTING MENU


PICTURE SIZE     : 720 X 480
TIME STAMP       : ON
TIME STAMP POS   : TOP
WATER MARK       : ON
WATER MARK POS   : TOP
```

10

6.1 CLOCK SETTING MENU

```
              CLOCK SETTING MENU


    DATE  : 2003/07/04  FRI
    TIME  :  13:01:02
    MENU LANGUAGE        : ENGLISH
    VIDEO SYSTEM         : NTSC



    VERSION: 0.79    11/23
```

In CLOCK/LANGUAGE SETTING MENU , we define:

(1) DATE : Current date, format: YYYY/MM/DD
            Year: 2000 ~ 2099, Month: 01~ 12, Date: 01~31, Week: Sunday~Saturday

(2) TIME : Current time, format: HH:MM:SS
            Hour: 00 ~ 23, Minute : 00 ~ 59, Second: 00 ~ 59

(3) MENU LANGUAGE: ENGLISH or Others

(4) VIDEO SYSTEM: Factory default setting depend on machine "NTSC" or "PAL" .

(5) VERSION: Current S/W revision and release date.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER
Press **ENTER** key to confirm the option and move to next column.

MENU
Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.2 TIMER SETTING MENU

TIMER SETTING MENU

WEEK	START	STOP	SPEED	SET
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF
SUN	00:00	23:59	50 IPS	OFF

In TIMER SETTING MENU we define automatic timer controlled records.

Timer records can be defined for 12 individual start and end times.

(1) WEEK: This select the week day for the timer to record on schedule.
   DLY means daily record.
(2) START: Enter the start time for timer recording.
(3) STOP: Enter the end time for timer recording.
   NOTE: The recorder records till the end of the minute, which is set here.
   EXAMPLE: START 07:00 END 08:00
      The recorder records from 07:00:00 till 08:00:59

      Each day has to be set separately:
   EXAMPLE: Daily record from 20:00 till next day 07:00
      WRONG: DLY START 20:00   STOP 07:00
      CORRECT: DLY START 20:00   STOP 23:59
                   DLY START 00:00   STOP 06:59

(4) SPEED : Select recording speed. Maximum 60 (NTSC) / 50 (PAL).
(5) SET: Set "ON" when using timer recording.
      Set "OFF" when not using timer recording.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER
Press **ENTER** key to confirm the option and move to next column.

MENU
Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

12

6.3 SEQUENCE SETTING MENU

```
SEQUENCE SETTING MENU

    CH  OP   DWELL

    1    ON   03 SECS
    2    ON   03 SECS
    3    ON   03 SECS
    4    ON   03 SECS
    5    ON   03 SECS
    6    ON   03 SECS
    7    ON   03 SECS
    8    ON   03 SECS
    9    ON   03 SECS
   (10   ON    03 SECS)
   (11   ON    03 SECS)
   (12   ON    03 SECS)
   (13   ON    03 SECS)
   (14   ON    03 SECS)
   (15   ON    03 SECS)
   (16   ON    03 SECS)
```

Columns in brackets () only valid for EDSR-1600

In the SEQUENCE SETTING MENU, we define for MAIN Monitor

(1) CH (Channel):   Input channels. 1~9 for EDSR-900, 1~16 for EDSR-1600.

(2) OP (Operation): ON includes the camera in the sequence, OFF skips the camera in the sequence.

(3) DWELL (DWELL TIME) : Dwell Time is individual adjustable for each channel. The dwelling time for the sequencer can be set between 0-99 seconds.

Note: Sequences for Call monitors are defined in MATRIX menu.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER
Press **ENTER** key to confirm the option and move to next column.

MENU
Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

6.4 TITLE SETTING MENU

```
TITLE SETTING MENU

CH   TITLE

1    CH01:_ _ _ _
2    CH02:_ _ _ _
3    CH03:_ _ _ _
4    CH04:_ _ _ _
5    CH05:_ _ _ _
6    CH06:_ _ _ _
7    CH07:_ _ _ _
8    CH08:_ _ _ _
(9   CH09:_ _ _ _
(10  CH010:_ _ _ _ )
(11  CH011:_ _ _ _ )
(12  CH012:_ _ _ _ )
(13  CH013:_ _ _ _ )
(14  CH014:_ _ _ _ )
(15  CH015:_ _ _ _ )
(16  CH016:_ _ _ _ )
```

Columns in brackets () only valid for EDSR-1600

In TITLE SETTING MENU , we define:

The Title Setting Menu allows you to assign a title to each camera input.
Title with up to 12 characters is supported in each channel.

The available alphanumeric characters are:
0,1,2,3,4,5,6,7,8,9,
A,B,C,D,…X,Y,Z.
/ ( ) . - * & @ : ”

Default setting is CH01~CH09 for EDSR-900, CH01~Ch16 for EDSR1600.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER
Press **ENTER** key to confirm the option and move to next column.

MENU
Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.5 COVERT SETTING MENU

```
COVERT SETTING MENU

CH   OP

1    OFF
2    OFF
3    OFF
4    OFF
5    OFF
6    OFF
7    OFF
8    OFF
9    OFF
(10   OFF)
(11   OFF)
(12   OFF)
(13   OFF)
(14   OFF)
(15   OFF)
(16   OFF)
```

Columns in brackets () only valid for EDSR-1600

In COVERT SETTING MENU , we define:

The covert setting menu allows you hide the desired camera on the display in a blue background. Change setting to ON for covering camera. Camera is not visable in Live and Playback mode, unless this function is deactivated in COVERT menu.

Default setting is OFF for all cameras.

Note: With network access a covert camera is only visable for users with "ADMIN" password level. For users with "GENERAL" and "GUEST" level the covered camera is not visable.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER

Press **ENTER** key to confirm the option and move to next column.

MENU

Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.6 ALARM RECORD SETTING MENU

```
┌─────────────────────────────────┐
│       ALARM SETTING MENU        │
│   CH  OP   TYPE  DURATION        │
│                                  │
│   1   ON   N.O   05 SECS         │
│   2   ON   N.O   05 SECS         │
│   3   ON   N.O   05 SECS         │
│   4   ON   N.O   05 SECS         │
│   5   ON   N.O   05 SECS         │
│   6   ON   N.O   05 SECS         │
│   7   ON   N.O   05 SECS         │
│   8   ON   N.O   05 SECS         │
│   9   ON   N.O   05 SECS         │
│  (10  ON   N.O   05 SECS)        │
│  (12  ON   N.O   05 SECS)        │
│  (13  ON   N.O   05 SECS)        │
│  (14  ON   N.O   05 SECS)        │
│  (15  ON   N.O   05 SECS)        │
│  (16  ON   N.O   05 SECS)        │
│  RST  ON   N.O                   │
└─────────────────────────────────┘
```

Columns in brackets () only valid for EDSR-1600

In ALARM RECORDING MENU, we define

(1) CH (Alarm input) : Select alarm input or RST for alarm reset input.

(2) OP (OPERATION) : ON : Records when alarm occurs.

OFF : No reaction when alarm occurs.

(3) TYPE : Select alarm type:
  N.C. : Normally Closed with time out function counting from alarm start (set in DURATION)
  N.C. + TRANS : Normal Closed, alarm duration as long as contacts is active + timeout (set in DURATION)
  N.O. : Normal Open with time out function counting from alarm start (set in DURATION)
  N.O. + TRANS: Normal Open, alarm duration as long as contact is active + timeout (set in DURATION)

(4) DURATION : Timeout duration time for each event. 0~99 seconds adjustable.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER
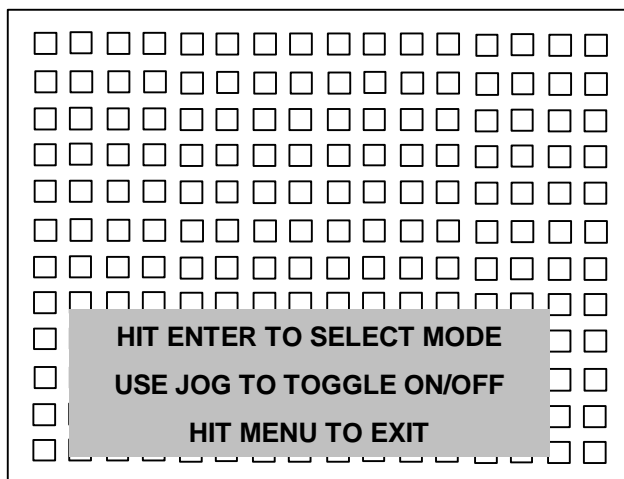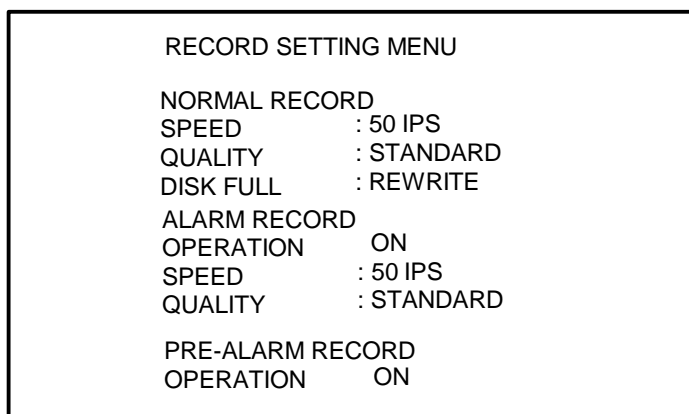Press **ENTER** key to confirm the option and move to next column.

MENU
Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.7 MOTION SETTING MENU

```
           MOTION SETTING MENU

        CH  OP   SEN    DURATION

        1   ON   HIGH   05 SECS
        2   ON   HIGH   05 SECS
        3   ON   HIGH   05 SECS
        4   ON   HIGH   05 SECS
        5   ON   HIGH   05 SECS
        6   ON   HIGH   05 SECS
        7   ON   HIGH   05 SECS
        8   ON   HIGH   05 SECS
        9   ON   HIGH   05 SECS
        (10  ON   HIGH    05 SECS)
        (11  ON   HIGH    05 SECS)
        (12  ON   HIGH    05 SECS)
        (13  ON   HIGH    05 SECS)
        (14  ON   HIGH    05 SECS)
        (15  ON   HIGH    05 SECS)
        (16  ON   HIGH    05 SECS)
```

Columns in brackets () only valid for EDSR-1600

In the MOTION RECORD SETTING MENU, we define

(1) CH (Channel) : video input channel

(2) OP (Operation) : Default: OFF

      ON: The device will respond recording when motion occurs.

      OFF: The device will not respond recording when motion occurs.

(3) SEN (Sensitivity) : HIGH, MIDDLE or **LOW** adjustable. Default: MIDDLE.

(4) DURATION: Duration time tor motion record and Alarm Out relay.

      0~99 seconds adjustable. Default: 05 seconds.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER

Press **ENTER** key to confirm the option and move to next column.

MENU

Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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(5) HIT 1-9/16 TO MANUAL EDIT:

Use the numenic keys (1~9 for EDSR-900 / 1~16 for EDSR-1600) to select a camera for setting the detection areas.

The selected camera appears with a 16 x 12 grid (detection zones):

```
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
□          HIT ENTER TO SELECT MODE      □ □
□          USE JOG TO TOGGLE ON/OFF       □ □
□                 HIT MENU TO EXIT         □ □
□ □ □ □ □ □ □ □ □ □ □ □ □ □ □ □
```

ENTER   jumps to the next detection field.

JOG wheel switches zone ON – active (area filled) or OFF – inactive (area empty) for motion detection.

MENU   key exits area setting and jumps back to MOTION SETUP MENU.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER   Press **ENTER** key to confirm the option and move to next column.

MENU   Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.8 RECORD SETTING MENU

```
        RECORD SETTING MENU

NORMAL RECORD
SPEED          : 50 IPS
QUALITY        : STANDARD
DISK FULL      : REWRITE
ALARM RECORD
OPERATION      ON
SPEED          : 50 IPS
QUALITY        : STANDARD

PRE-ALARM RECORD
OPERATION      ON
```

In NORMAL RECORDING MENU, we define

(1)   NORMAL RECORD:
SPEED : To set the normal recording speed. Maximum 60 (NTSC) / 50 (PAL).
QUALITY: Video recording quality setup for setting the quality of the video picture by selecting a compression rate. There are six quality levels for recording

LOWER	**: 15 KB**	
LOW	**: 19 KB**	
BASIC	**: 23 KB**	
STANDARD	**: 27 KB**	
HIGH	**: 31 KB**	
SUPERIOR	**: 35 KB**	

DISK FULL: Set **REWRITE** or **STOP** when HDD is full.

(2)   ALARM RECORD (for Alarm In and Motion detection):
OP (Operation): Select **ON** or **OFF** to activate alarm recording or not.
SPEED : To set the alarm and motion recording speed. Maximum 60 (NTSC) / 50 (PAL).
QUALITY: Video recording quality setup, this item lets you set the quality of the video picture by selecting a compression rate.
NOTE: The record rates are for the total system: The single camera record rate is:
Camera record rate = System record rate / Number of connected cameras
Example: Record Rate 50 lps, 6 connected cameras: ~ 8,3 lps / camera

(3)   PRE-ALARM RECORD: (with Alarm In and Motion)
Pre – Alarm duration is depending on record quality (about 8-15 seconds).
OP (Operation): Select **ON** or **OFF** to activate pre-alarm recording or not .

	Turn the **JOG** dial clockwise or counter-clockwise to select the options.
ENTER	Press **ENTER** key to confirm the option and move to next column.
MENU	Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.9 NETWORK SETTING MENU

```
NETWORK SETTING MENU

IP ADDRESS            : 192.168.010.005
NET MASK ADDRESS      : 255.255.255.000
GATEWAY ADDRESS       : 192.168.010.001
MAC ADDRESS           : 00:5A:56:A3:87:1A


USER-NAME      PASSWORD        LEVEL

GUEST---       GUEST---        GUEST---
GENERAL-       GENERAL-        GENERAL-
SUPER---       SUPER---         SUPER---
```

In the NETWORK SETTING MENU, we define

(1)   IP ADDRESS : Assign an fixed IP address for this unit, for example:192.168.010.005

(2)   NET MASK ADDRESS: Assign a subnet mask of the network for this unit, for example:255.255.255.000

(3)   GATEWAY ADDRESS: Assign a default gateway for this unit, for example:192.168.010.001

(4)   MAC ADDRESS:
Display of fixed hardware address of the network interface.

Note: After changing network settings, screen will comes up as following:

```
Network setting………………………….
Please reboot to effect network setting
```

After restart of EDSR the new network settings are activated.

(5)   USER-NAME PASSWORD LEVEL

The Login name and password are used to establish a network connection to the unit.
The PASSWORD setup allows the administrator to set the new Login name and password
with access level "SUPER","GENERAL" or "GUEST".

The system allows up to four users connected at same time with different access levels.
"**ADMIN** " : can view live/playback video, covert cameras and control all operation/setup.
"**GENERAL**": can view live and playback video.
"**GUEST**":can only view live display.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER

Press **ENTER** key to confirm the option and move to next column.

MENU

Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.10 CONTROL SETTING MENU

```
                    CONTROL SETTING MENU

          RS232 BAUD RATE    : 9600 BPS
          RS232 STOP BIT     : 1
          RS232 PARITY       : NONE
          RS232 DATA BIT     : 8

          RS485 BAUD RATE    : 9600 BPS
          RS485 STOP BIT     : 1
          RS485 PARITY       : NONE
          RS485 DATA BIT     : 8

          RS232/RS485 ID     : 1
```

 In the CONTROL SETTING MENU, we define

(1) RS232 BAUD RATE: There are 6 different speeds that can be used to transmit instruction or information through the RS232 port on the device, 1200 baud,2400 baud,4800 baud,9600 baud, 19200 baud,and 3840 baud. The default setting from the factory is 9600 baud.

(2) RS232 STOP BIT: Select stop bit: 1 or 2

(3) RS232 PARITY: Select parity mode: NONE/ODD/EVEN

(4) RS232 DATA BIT: Select data bit : 8 or 7

(5) RS485 BAUD RATE: There are 6 different speeds that can be used to transmit instruction or information through the RS485 port on the device, 1200 baud,2400 baud,4800 baud,9600 baud, 19200 baud,and 3840 baud.

(6) RS485 STOP BIT: Select stop bit: 1 or 2

(7) RS485 PARITY: Select parity lever: NONE/ODE/EVEN

(8) RS485 DATA BIT: Select data bit : 8 or 7

(9) RS232/RS485 ID: RS232/RS485 address.The adress range for the DVR: 1~200.

NOTE: Settings for remote keyboards KS-KBK and KS-KBJ:

RS-485 Baud rate: 9600, 1 Stop bit, Parity NONE, ID (device number) range: 1~32

	Turn the **JOG** dial clockwise or counter-clockwise to select the options.
ENTER	Press **ENTER** key to confirm the option and move to next column.
MENU	Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

6.11 BUZZER SETTING MENU
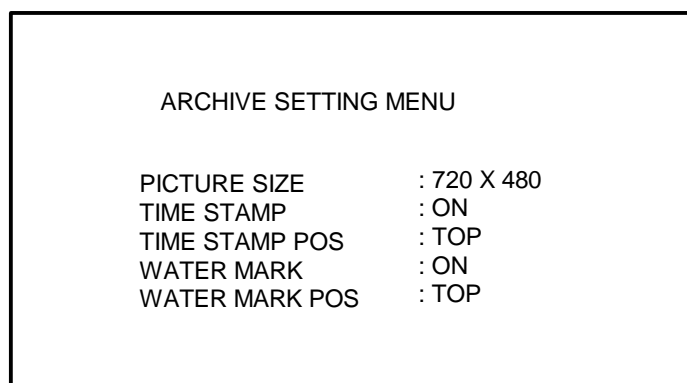
```
BUZZER SETTING MENU

BUZZER        :   ENABLE

RECORD-IN     :   ON
ALARM-IN      :   ON
MOTION-IN     :   ON
DISK FULL     :   ON
VIDEO LOSS    :   ON
TIMER         :   ON
```

**In BUZZER SETTING MENU, we define the buzzer
ON/OFF for following event:**

RECORD-IN, ALARM-IN, MOTION-IN, DISK FULL, VIDEO LOSS AND TIMER

Turn the **JOG** dial clockwise or counter-clockwise to select the options.
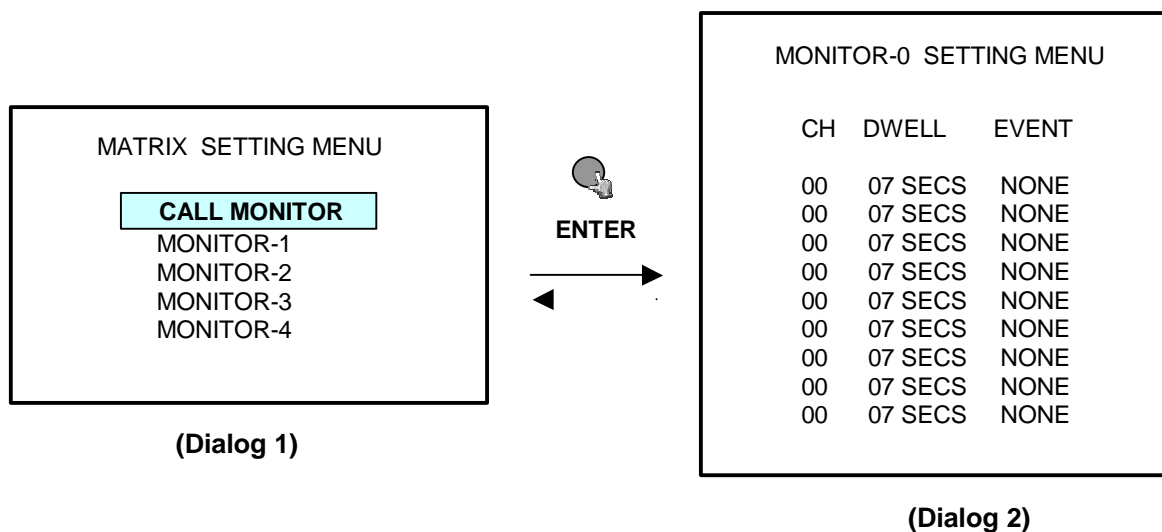
ENTER

Press **ENTER** key to confirm the option and move to next column.

MENU

Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.12 ARCHIVE SETTING MENU

```
ARCHIVE SETTING MENU


PICTURE SIZE        : 720 X 480
TIME STAMP          : ON
TIME STAMP POS      : TOP
WATER MARK          : ON
WATER MARK POS      : TOP
```

In the ARCHIVE SETTING MENU, we define for picture and movie export to CF-card:

(1) PICTURE SIZE :

Selects picture size for copying image to CF card:

Big size:720x480 / 720x576 for NTSC / PAL.

Small size:352x240 / 352x288 for NTSC / PAL.

(2) TIME STAMP :

ON: Shows the time stamp on the picture when copying image to CF card.

OFF: This erases the time stamp on the picture when copying image to CF card.

(3) TIME STAMP POS (Position):

BOTTOM: The time stamp will show on the bottom of the image.

TOP: The time stamp will show on the top of the image.

(4) WATER MARK:

ON: Shows a water mark on the picture when copying image to CF card.

OFF: No water mark on the picture when copy image to CF card.

(5) WATER MARK POS (Position):

BOTTOM: Water mark will show on the bottom of the image.

TOP: Water mark will show on the top of the image.

	Turn the **JOG** dial clockwise or counter-clockwise to select the options.
ENTER	Press **ENTER** key to confirm the option and move to next column.
MENU	Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.13 MATRIX SETTING MENU

```
MATRIX  SETTING MENU

   CALL MONITOR
   MONITOR-1
   MONITOR-2
   MONITOR-3
   MONITOR-4
```

(Dialog 1)

ENTER

```
MONITOR-0  SETTING MENU

 CH   DWELL      EVENT

 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
 00   07 SECS    NONE
```

(Dialog 2)

In the MATRIX SETTING MENU, we define the standard sequences for each matrix monitor and event, which override these sequences.

Users may set up to 5 call monitors accordingly (Dialog 1).

Note: CALL MONITOR is the regular CALL MONITOR. MONITOR-1~4 are additional 4 call monitors for video matrix functions.
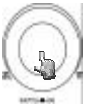
Select the desired call monitor and then press **ENTER** key. The SUB-MENU will show as Dialog 2.
CH, DWELL, EVENT:

(1) CH (Channel): Select the camera to be shown in the standard sequence of this call monitor. With setting "00" the channel will be skipped in the sequence.

(2) DWELL (Dwelling time): Set 0~99 seconds for the dwelling time of each camera.

(3) EVENT: Set the alarm and correspondent motion to the camera.

NONE: no alarm or motion action is assigned to this camera.

MOTION: If MOTION detection is active for this camera, the camera will be displayed, if motion is detected. After alarm record duration the monitor switches back to standard sequence or spot camera (depending on operation).

A01 ~ A09: The camera will be displayed, if selected alarm input is active.

Turn the **JOG** dial clockwise or counter-clockwise to select the options.

ENTER
Press **ENTER** key to confirm the option and move to next column.

MENU
Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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6.14 SYSTEM SETTING MENU

```
SYSTEM SETTING MENU

PLAY WITH AUDIO-1 :    ON

PLAY WITH AUDIO-2 :    ON

PLAY SPEED         :    50 IPS

PASSWORD ENABLE :      DISABLE

PASSWORD:              888888

DISK USAGE             HDD-1    HDD-2

SIZE (GB)          :   160      160

RECORD POS         :   * 30.7%  0%

PLAY POS           :   *30.7%   0%

DISK RENEW:            NO       NO


SYSTEM UPDATE:         NO

LOAD DEFAULT:          NO
```

In the SYSTEM SETTING MENU, we define

(1) PLAY WITH AUDIO: AUDIO-1, AUDIO-2

　　ON/OFF: Play back with or without audio.
(2) PLAY SPEED: Set the playback speed. Maximum 60 (NTSC) / 50 (PAL).
(3) PASSWORD ENABLE: Enable/Disable the password protection.
(4) PASSWORD: Set password with 6 digits
(5) DISK USAGE: HDD-1, HDD-2
　　SIZE: Applied HDD size.
　　RECORD POS: HDD usage rate, record position, "*" shows the active HDD
　　PLAY POS: current playback position, "*" shows the active HDD
　　DISK RENEW: Erase HDD-1, HDD-2
(6) SYSTEM UPDATE: Select **YES/NO** for updating system.
　　YES: Download the update S/W into C.F card through your PC and insert the CF card
　　　　into the slot on the front panel of DVR. Press **ENTER** key to start.
Notice: After the system is successfully updated, please reboot the system.
(7) LOAD DEFAULT: Select **YES/NO** to load factory default setting, neccessary after update.

|	
	Turn the **JOG** dial clockwise or counter-clockwise to select the options.
ENTER	Press **ENTER** key to confirm the option and move to next column.
MENU	Press **MENU** key to return to Main Menu, press again to leave Set up Menu.

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7.1 INSTANT RECORDING

Press **REC** key to start continuous recording with setting of "NORMAL RECORD".

REC

The recording rate and recording quality are set in the RECORD SETTING MENU.

The LCD screen on the front panel of DVR will display as follows:

2003/11/23		REC HDD1 70%
21:56:47	◄	50 IPS 21:56:52
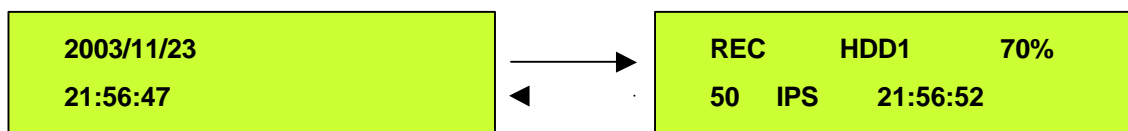
Display shows operation status, active HDD, record position on active HDD, record frame rate ant current time.

REC, Maximum 60 (NTSC) / 50 (PAL) fields will also show on the main monitor display if you press the **DISPLAY** key to show camera title and date/time.

Press **STOP** key to stop recording.

STOP   Since the DVR had Duplex feature, STOP key can be activated both in Playing back and Recording. In Duplex mode first STOP will stop playback, second STOP will stop recording.

When the HDD is full, the machine will ▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮▮ or ▮▮▮▮▮▮▮▮ from the beginning of the HDD. It depe▮▮▮ ▮▮ ▮▮▮ ▮▮▮▮▮▮ ▮▮ **R▮▮▮▮D S▮▮▮▮▮ ▮▮▮▮**.

7.2 ALARM RECORDING

When the ALARM OPERATION setting is "ON", the DVR will automatically record when alarm occurs , and will automatically stops recording at the end of the alarm duration period.

As example, we set ALARM RECORDING SPEED on 60 (NTSC) / 50 (PAL) field, the screen will show as below,

A.   REC (50IPS)
DISK: 39 GB
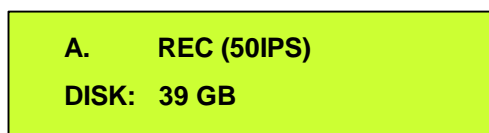
Instant recording and timer recording will stop when an alarm occurs.

Please refer details in RECORD SETTING MENU (page 19).

8.1 NORMAL PLAYBACK

(1) Playback

Press the **PLAY** key to start playing back the stored image/audio from the last SEGMENT.

PLAY

NOTE: In Duplex mode (simultaneous record and playback) the playback speed is limited to 25 IPS. For realtime display of 50 IPS records stop recording before starting playback.

(2) Fast Forward/Reverse Playback

During playing back, turn the **SHUTTLE** ring clockwise to start fast forward playing back.
The speed will be shown on the screen at the bottom of the screen.
>> 2X, 4X, 8X, 16X, 32X, 600X

Turn the SHUTTLE ring counter-clockwise to start fast reverse playing back.
The speed will be shown on the screen.
<< 2X, 4X, 8X, 16X, 32X, 600X

(3) Slow Forward/Reverse Playback

During playing back,press **PAUSE** key to freeze the playing back picture.

PAUSE
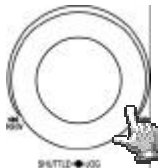
Turn the **SHUTTLE** ring clockwise to start slow forward playing back.
The speed will show at the bottom of the screen.
>> 1/2, 1/4, 1/8, 1/10, 1/16, 1/32

Turn the **SHUTTLE** ring counter-clockwise and slow reverse playback starts.
The speed will show on the SCREEN at the corner of the screen.
<< 1/2, 1/4, 1/8, 1/10, 1/16, 1/32

(4) Field advance Forward/Reverse
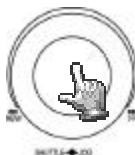
During **PAUSE** mode, turn the **JOG** dial clockwise to advance the still image field by field.

Turn the job dial counterclockwise to rewind the still image field by field.

(5) Press STOP key to stop playing back.

Notice: Press STOP key again will stop recording. Please check the REC key if it lights or not after your operation.
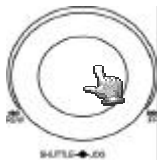
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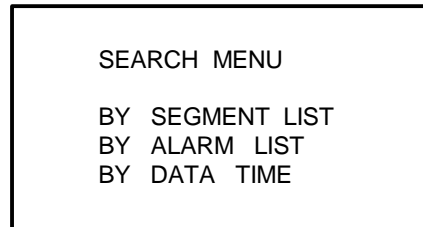## 8.2 SEARCH PLAYBACK

(1) Segment List search playback

Press **SEARCH** key to enter the SEARCH MENU dialog.

SEARCH

```
SEARCH  MENU

BY  SEGMENT  LIST
BY  ALARM  LIST
BY  DATA  TIME
```
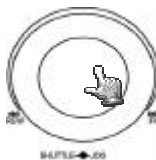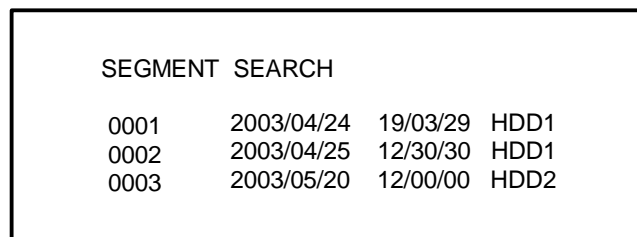
Turn the **JOG** dial to select BY SEGMENT LIST and press **ENTER** key.

A **segment** is a range on the HDD, beginning with record start (manual, alarm, motion or after power loss) and ending with record stop.

NOTE: If the recorder starts to overwrite a HDD, also a new segment will be generated.

The submenu will display as follows:

```
SEGMENT  SEARCH

0001        2003/04/24    19/03/29   HDD1
0002        2003/04/25    12/30/30   HDD1
0003        2003/05/20    12/00/00   HDD2
```

Turn the **JOG** dial to select desired items.

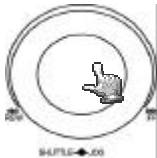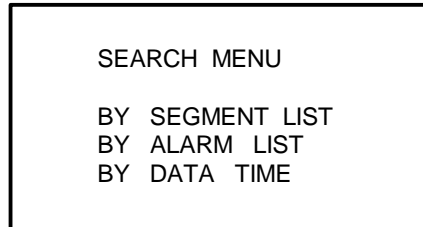Press **ENTER** key to start playing back selected segment.

ENTER

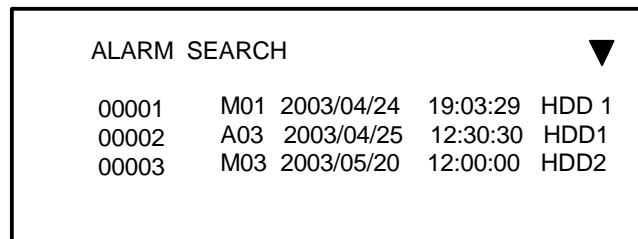Press **STOP** key to end playing back and return to static display.

STOP

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(2) Alarm List search playback

Press **SEARCH** key to enter the SEARCH MENU dialog.

SEARCH

```
SEARCH  MENU

BY  SEGMENT  LIST
BY  ALARM  LIST
BY  DATA  TIME
```

Turn the **JOG** dial to select BY ALARM LIST and press **ENTER** key. The submenu will display as follows:

```
ALARM  SEARCH                            ▼

00001      M01  2003/04/24   19:03:29  HDD 1
00002      A03  2003/04/25   12:30:30  HDD1
00003      M03  2003/05/20   12:00:00  HDD2
```

A01 : Alarm recording by Alarm-in 1.
M03: Motion recording by camera 3.
T : Timer recording.
PL: automatic record restart after end of power loss
▼ : to next page   ▲ : to previous page.

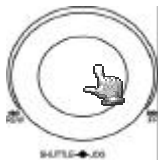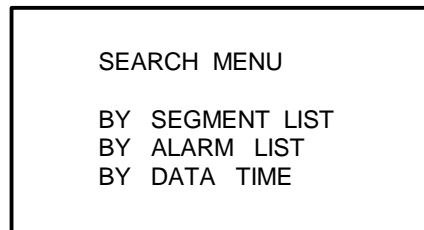Press **ENTER** key to start playing back selected alarm list.

ENTER

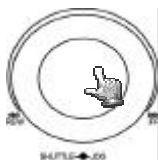Press **STOP** key to end playing back and return to static display.

STOP

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(3) Date/Time Search Playback

Press **SEARCH** key to enter the SEARCH MENU dialog.

SEARCH

```
SEARCH  MENU

BY  SEGMENT  LIST
BY  ALARM   LIST
BY  DATA   TIME
```

Turn the **JOG** dial to select BY DATA TIME and press **ENTER**
key. The submenu and instruction will display as follows:

```
DATE/TIME SEARCH

YEAR/MM/DD  HH:MM:SS  HDD
2003 /01 /01    21: 33: 26     1

PRESS SEARCH TO START SEARCH
PRESS MENU TO EXIT
```

Turn the **JOG** dial to select desired date/time and stored hard disk.

Press **SEARCH** key to start playing back by date/time search or
press **MENU** key to exit..

SEARCH

Notice: If there is no image stored in the date/time specified then the machine
will start playing back from the nearest set time automatically.

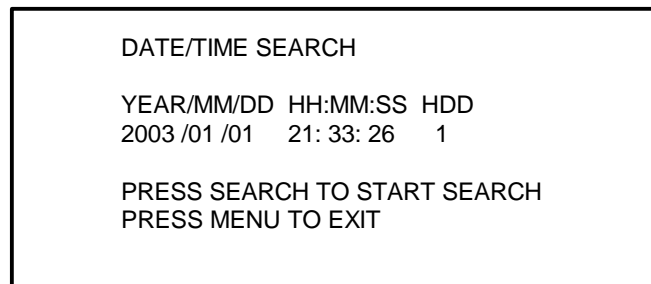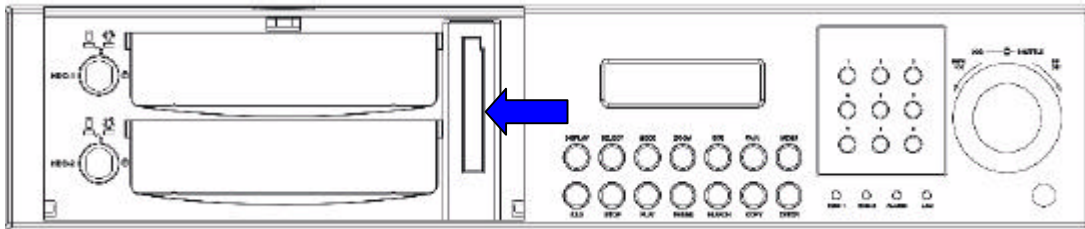Press **STOP** key to end playing back and return to static display.

STOP

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9. DATA EXPORT

Insert a Compact Flash card into the Compact Flash slot on the front panel of DVR.
When inserting the Compact Flash card, make sure that insert direction is correct.

NOTE: COPY function is not possible during RECORD. Stop recording to enable COPY
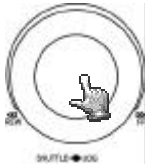function!

9.1 STILL IMAGE COPY

PAUSE

The still image copy function is possible in all playback view modes.
Press the **PLAY** key to start playing back.
Press the **PAUSE** key to pause playback.
The Monitor OSD shows "PAUSE ON (1~9 for EDSR-900, 1~16 for
EDSR-1600)" . The displayed number shows the active channel for the
COPY function.

Turn the **JOG Dial** clockwise to choose your desired image.

COPY

While displayed as your desired image of choice ,
press the **COPY** key. The " Copying …" will be shown on the screen during
the process.

Notice:
Copied images are stored as a single picture. Copied files are saved as .JPG file.

Notice:
Please wait after the message "DONE" about 5 seconds before removing CF-card
for ensure correct finish of write process.

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9.2 COPY TO MOVIE FILE

NOTE: COPY function is not possible during RECORD.
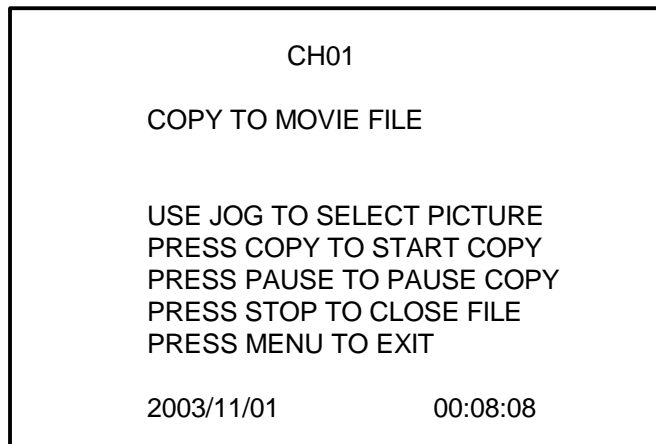
Stop recording to enable COPY function!

PLAY

Press the **PLAY** key to start playing back.

COPY

Press **COPY** key and then the copy menu and instruction appears.
The main monitor switches to full screen display with following OSD:

```
              CH01

         COPY TO MOVIE FILE


      USE JOG TO SELECT PICTURE
      PRESS COPY TO START COPY
      PRESS PAUSE TO PAUSE COPY
      PRESS STOP TO CLOSE FILE
      PRESS MENU TO EXIT

      2003/11/01            00:08:08
```

Turn the **JOG Dial** clockwise to choose your channel for copying.

COPY

While displaying as your desired image of choice,
Press **COPY** key to start copying image.

PAUSE

Press **PAUSE** key to pause copy image.

STOP

Press **STOP** key to finish copy and close file.

MENU

Press **MENU** key to return to playback. Press **STOP** to stop playing back.

Notice: Please wait after the message "DONE" about 5 seconds before removing CF-card for ensure correct finish of write process.

Notice: Copied images are stored as a movie picture. Copied files are saved as .MOV file. Use QuickTime to play the retrieved .MOV files. You may download QuickTime at _____. The playback version for QuickTime is free.

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9.3 EXPORT EVENT LOG LIST

This function allows to export the event log list to CompactFlash – Card.
The generated text file in in *.txt format.

DISPLAY

Press „DISPLAY" key and hold key for about 2 seconds.

```
                    EVENT LOG


    TYPE      ID       TIME
    MOTION    2        2004/01/02   12:12:54
    VL        1        2004/01/02   12:12:54
    VL        3        2003/12/29   12:12:54
    VL        1        2003/12/28   12:12:54

    USE JOG TO SWITCH PAGE
    HIT CALL TO TURN OFF BUZZER
    HIT COPY TO SAVE EVENT TO CF CARD
    HIT MENU TO EXIT
```

The event log list will be displayed:

TYPE: event type:
              MOTION : motion detection
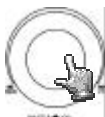   **ALARM**: alarm in
              VL: video loss
              PL: restart after Power Loss
ID: video input number for motion and video loss, alarm in contact for Alarm
TIME: start time of event

Turn the **JOG Dial** to jump to next event list page.

CALL

Press **CALL** to switch off buzzer, if active.

COPY

Press **COPY** to save the current event list page to CompactFlash Card.

MENU

Press **MENU** to exit event log list.

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10. MONITOR VIEWS / OPERATION

The EDSR900/1600 digital recorders provide 1 main monitor and 5 matrix monitors.

These monitors have different functionalities:

Main monitor: - Full screen and multi screen display:

EDSR-900: Full, 4, 6, 7, 8, 9, PIP, and 2x zoom

EDSR-1600: Full, 4, 6, 7, 9, 10, 13, 16, PIP, sequence and 2x zoom

- Live- and Playback display

- OSD for camera title, status messages, setup menu
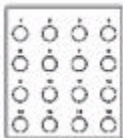
CALL / Matrix monitors: - full screen display

- sequence mode or fixed camera display

- display of motion or alarm cameras

- OSD for camera title and alarm messages

10.1. MAIN MONITOR

MODE

The **MODE** key switches the different multiscreen modes.

The numeric keys switch to full screen mode with the selected camera.

DISPLAY

DISPLAY switches the OSD for camera titles and status messages ON/OFF.

ZOOM

The ZOOM function is only available in full screen mode. Press **ZOOM** to activate the electronix 2 x zoom. Use the **JOG** wheel to move left/right in the picture. **ENTER** switches vertical / horizontal movement.

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10.2. CALL / MATRIX MONITORS

CALL

Press CALL to change settings for CALL / MATRIX monitors.
The Main monitor shows following dialogue:

```
MATRIX NORMAL STATE
SETTING MENU

PRESS CALL TO SET CALL
MONITOR

PRESS 1-4 TO SELECT MATRIX

PRESS MENU TO EXIT
```

Select the monitor by pressing CALL or the numeric keys 1~4.
The Main monitor shows following dialogue (example with monitor 1):

```
SETTING MATRIX 1

SEQUENCE

OSD            ON


PRESS 1 – 16 TO SELECT SPOT CAMERA
PRESS SEQUENCE TO SEQUENCE
PRESS DISPLAY TO TURN OSD ON/OFF
PRESS MENU TO EXIT
```
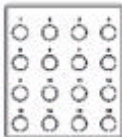
The current status of the selected monitor is shown in the second and third column

(Sequence / Spot, OSD ON/OFF).

SEQUENCE

Press sequence to activate the standard sequence for this monitor (setup for this sequence in menu MATRIX, page 24)

The numeric keys switch to full screen mode with the selected camera.

MENU

Press MENU to jump back to monitor selection menu.

NOTE: In menu **MATRIX** defined events for motion and alarm have
                higher priority and will override the manual settings. After end of
                any event the monitor switches back to the manual settings.

11. REMOTE CONTROL

11.1 RS-485 REMOTE CONTROL

The new standard EverFocus EDSR remote protocol allows challenging installations with DVR remote control at different installation sites.

EDSR remote control is supported by the keyboards **KS-KBJ** (with 3-axis joystick and 2 additional RS-485 – Ports for telemetry control with independent telemetry protocols) and **KS-KBK** (no telemetry).

Up to 32 units are allowed in the RS-485 bus. The RS-485 bus requires serial wiring with 2-wire shielded twisted pair cable("daisy chain"). Maximum cable lenght of the bus is 1200 m.
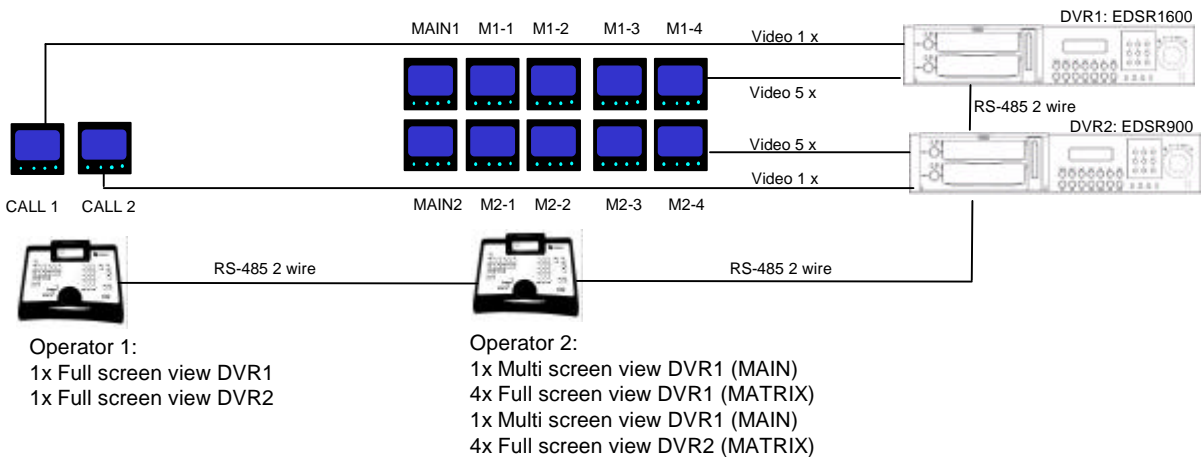
Star wiring is only possible with additional RS-485 distributor.

Mixed installation is possible with following recorder types:

EDSR100H, EDSR100M, EDSR400, EDSR400H, EDSR400M, EDSR900, EDSR1600

For installation details please consult the manuals of KS-KBK and KS-KBJ keyboard.

Installation example (2 remote operators, 1 EDSR900, 1 EDSR1600) :

Operator 1:
1x Full screen view DVR1
1x Full screen view DVR2

Operator 2:
1x Multi screen view DVR1 (MAIN)
4x Full screen view DVR1 (MATRIX)
1x Multi screen view DVR1 (MAIN)
4x Full screen view DVR2 (MATRIX)

RJ45 (RS485) pin assignment

There are two RJ-45 (RS-485) connectors on the back panel of the DVR (loop through). Please refer the following pin assignment for application.
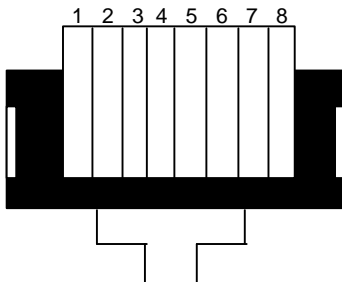
PIN	FUNCTION
1	GND
2	NC
3	RX +
4	NC
5	NC
6	RX -
7	NC
8	NC

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11.2 IR Remote Controller (optional)

The remote controller (RC-200, Figure 1) is an accessory to enhance the handy operations of the DVR. You can perform all the settings and operations by the remote controller. The effective distance is up to 10 meters without any obstacle. The keypad functions are same as the front panel key button of the DVR.

There are some replacement keys for JOG and SHUTTLE, definitions are:

JOG ▶ : Same as turning the JOG clockwise.

JOG ◀ : Same as turning the JOG counter-clockwise.

SHUTTLE ▶▶

1: fast forward 2X or slow forward 1/2X.

2: fast forward 4X or slow forward 1/4X.

3: fast forward 8X or slow forward 1/8X.

4: fast forward 16X or slow forward 1/10X.

5: fast forward 32X or slow forward 1/16X.

6: fast forward 600X or slow forward 1/32X.

SHUTTLE ◀◀

1: fast rewind 2X or slow rewind 1/2X.

2: fast rewind 4X or slow rewind 1/4X.

3: fast rewind 8X or slow rewind 1/8X.

4: fast rewind 16X or slow rewind 1/10X.

5: fast rewind 32X or slow rewind 1/16X.

6: fast rewind 600X or slow rewind 1/32X.

Note: The channel keys #10~16 are only active

with EDSR-1600 recorder
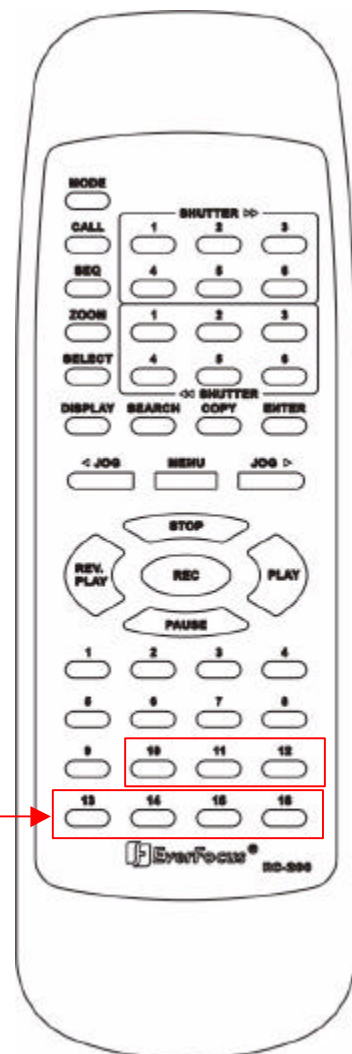
Figure 1

12. View From Internet/Intranet

Basic Operations and Login Display:

Go to the Internet Explorer, key in the network IP address, for example,
                     (must be the same IP address as the one assigned to the
unit from the Network Setting Menu. You need a FIXED IP Address, please contact your ISP for the IP)
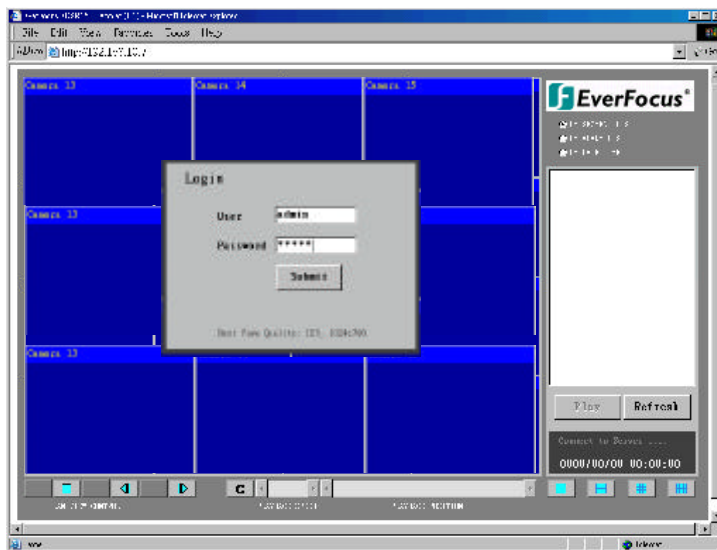
The LOGIN dialog will show on the screen.
User' must enter the correct user-name and password defined in the Network Setting menu.

For example:
Enter ADMIN for user name and ADMIN for password and then Click On "submit" to enter to system.

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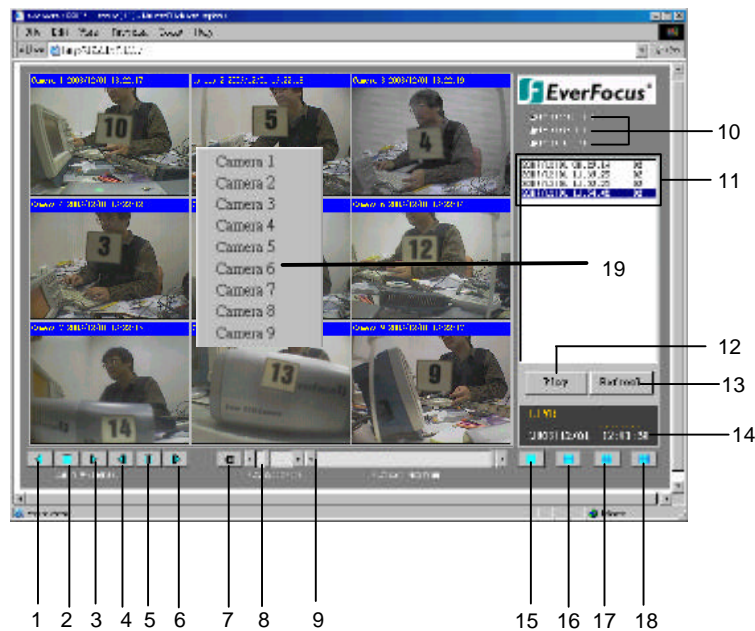
Main Screen

Above diagram is the main screen display.

The icons on the lower corner of the screen are mainly for control and Configuration, those on the right corner are for status indication.

If any icon is grayed, it means that the specific function is not accessible in the current mode.

The followings are a brief description for each of the icons.

1.　**REV. PLAY :** Reverse Video Playback.

2.　**STOP :** Press this key to stop Video Playback.

3.　 **PLAY:** Play back the Video display.

4.　**STEP FORWARD** the Video Playback display.

5.　 **PAUSE:** To pause the Video Playback display.

6.　 **STEP BACKWARD** the Video Playback display

7. **C**　**CONTROL MODE:** To switch to direct remote control mode.

　　Note: Only allows user with access level "ADMIN"..

　8. Control for Playback Video Speed

　9. Control for Playback Position

10. The system allows up to 3 ways playback video, by **SEGMENT, ALARM LIST** and **DATE TIME**.

(Playback by SEGMENT LIST, click Refresh to show list)
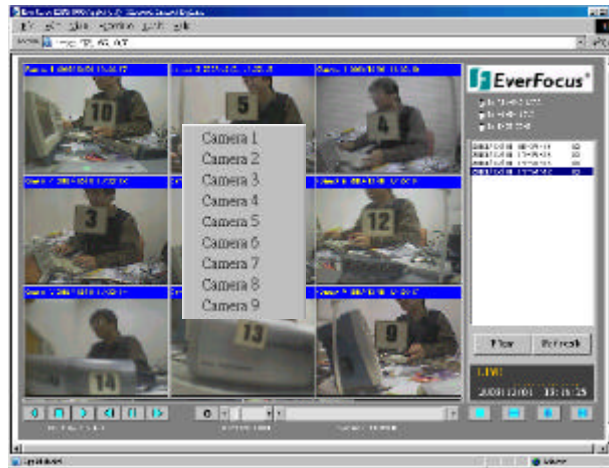
(Playback by ALARM LIST, click Refresh to show list)
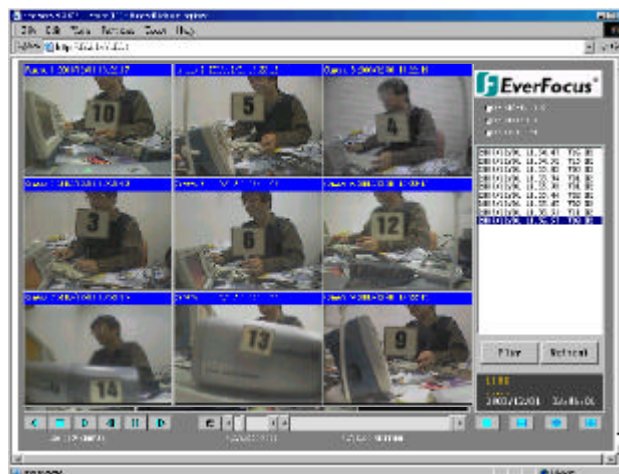
(Playback by Date time)

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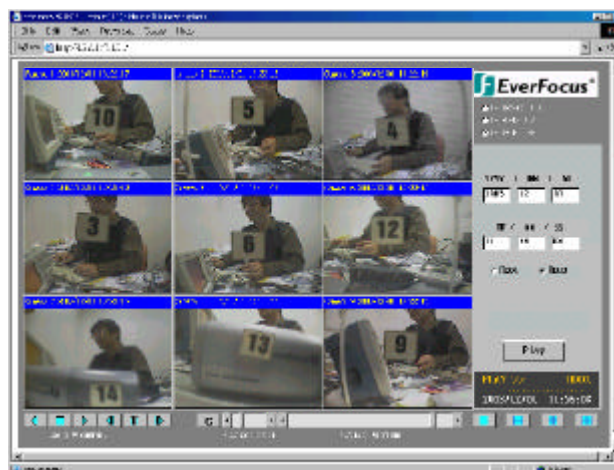
11. All available segments are shown in the list. Click to select and highlight.

12. Click to playback selected video segment.

13. Press this icon to show the segment or list.

14. Current connection and playback status is shown along with date and time.

15. Full screen view.

16. Quad screen view.

17. Nine split screen view.

18. Sixteen split screen view (only for 16 CH DVR).

19. A pop-up menu to select camera to view will be shown by pressing right mouse button.

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LAN Functional Specification

Specifications:

Network Interface:	10Mbits/s Ethernet (10Base T)
LAN controller Chip:	RealTek 8019
LAN Connector:	RJ-45
Protocol:	HTTP,TCP/IP.ICMP,ARP
Remote Access:	Standard browser such as internet Explorer / Netscape with JAVA support
Image Compression:	JPEG
Used Ports:	80, 1111, 2222, 3333, 4444, 6666
Max. user number:	4
Frame rate:	max. 1,5 IPS depending on network conditions

Time Lapse Mode Recording Time Table

✍ When Recording with 160GB HDD

(Estimated with typical image-low noise level)

Lower	: 15 kB
Low	: 19 kB
Basic	: 23 kB
Standard	: 27 kB
High	: 31 kB
Superior	: 35 kB

NTSC	Unit: Hour			system storage(GB):		160
Recording	PICTURE QUALITY (KB)					
Speed	LOWER	LOW	BASIC	STANDARD	HIGH	SUPERIOR
(fps)	15	19	23	27	31	35
60	49.4	39	32.2	27.4	23.9	21.2
30	98.8	78	64.4	54.9	47.8	42.3
20	148.1	117	96.6	82.3	71.7	63.5
15	197.5	155.9	128.8	109.7	95.6	84.7
10	296.3	233.9	193.2	164.6	143.4	127
5	592.6	467.8	386.5	329.2	286.7	254
1	2963	2339.2	1932.4	1646.1	1433.7	1269.8
0.5	5925.9	4678.4	3864.7	3292.2	2867.4	2539.7
0.3	9876.5	7797.3	6441.2	5487	4779	4232.8
0.2	14814.8	11695.9	9661.8	8230.5	7168.5	6349.2

PAL	Unit: Hour					
Recording	PICTURE QUALITY (KB)					
Speed	LOWER	LOW	BASIC	STANDARD	HIGH	SUPERIOR
(fps)	15	19	23	27	31	35
50	59.3	46.8	38.6	32.9	28.7	25.4
25	118.5	93.6	77.3	65.8	57.3	50.8
10	296.3	233.9	193.2	164.6	143.4	127
5	592.6	467.8	386.5	329.2	286.7	254
2	1481.5	1169.6	966.2	823	716.8	634.9
1	2963	2339.2	1932.4	1646.1	1433.7	1269.8
0.5	5925.9	4678.4	3864.7	3292.2	2867.4	2539.7
0.4	7407.4	5848	4830.9	4115.2	3584.2	3174.6
0.2	14814.8	11695.9	9661.8	8230.5	7168.5	6349.2
0.1	29629.6	23391.8	19323.7	16460.9	14336.9	12698.4

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

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✍ When Recording with 320GB HDD

(Estimated with typical image-low noise level)

Lower   : 15 kB
Low   : 19 kB
Basic   : 23 kB
Standard : 27 kB
High   : 31 kB
Superior : 35 kB

NTSC	Unit: Hour			system storage(GB):		320
Recording	**PICTURE QUALITY (KB)**					
Speed	**LOWER**	**LOW**	**BASIC**	**STANDARD**	**HIGH**	**SUPERIOR**
(fps)	**15**	**19**	**23**	**27**	**31**	**35**
60	98.8	78	64.4	54.9	47.8	42.3
30	197.5	155.9	128.8	109.7	95.6	84.7
20	296.3	233.9	193.2	164.6	143.4	127
15	395.1	311.9	257.6	219.5	191.2	169.3
10	592.6	467.8	386.5	329.2	286.7	254
5	1185.2	935.7	772.9	658.4	573.5	507.9
1	5925.9	4678.4	3864.7	3292.2	2867.4	2539.7
0.5	11851.9	9356.7	7729.5	6584.4	5734.8	5079.4
0.3	19753.1	15594.5	12882.4	10973.9	9557.9	8465.6
0.2	29629.6	23391.8	19323.7	16460.9	14336.9	12698.4

PAL	Unit: Hour					
Recording	**PICTURE QUALITY (KB)**					
Speed	**LOWER**	**LOW**	**BASIC**	**STANDARD**	**HIGH**	**SUPERIOR**
(fps)	**15**	**19**	**23**	**27**	**31**	**35**
50	118.5	93.6	77.3	65.8	57.3	50.8
25	237	187.1	154.6	131.7	114.7	101.6
10	592.6	467.8	386.5	329.2	286.7	254
5	1185.2	935.7	772.9	658.4	573.5	507.9
2	2963	2339.2	1932.4	1646.1	1433.7	1269.8
1	5925.9	4678.4	3864.7	3292.2	2867.4	2539.7
0.5	11851.9	9356.7	7729.5	6584.4	5734.8	5079.4
0.4	14814.8	11695.9	9661.8	8230.5	7168.5	6349.2
0.2	29629.6	23391.8	19323.7	16460.9	14336.9	12698.4
0.1	59259.3	46783.6	38647.3	32921.8	28673.8	25396.8

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

Serial Interface Specifications

1. RS-232 pin assignment

The DVR may be controlled by a computer or a terminal via the standard
D-SUB 9-pin RS-232 connector.

■ The pin assignment of the D-SUB 9-pin connector
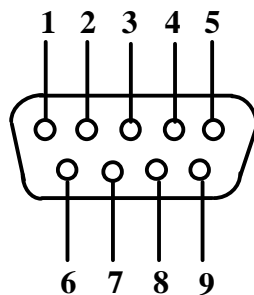
DVR			HOST	
PIN #	**NAME**		**PIN #**	**NAME**
1	NOT CONNECTED		1	NOT CONNECTED
2	TXD	→	2	RXD
3	RXD	←	3	TXD
4	NOT CONNECTED		4	NOT CONNECTED
5	GROUND	──	5	GROUND
6	NOT CONNECTED		6	NOT CONNECTED
7	NOT CONNECTED		7	NOT CONNECTED
8	NOT CONNECTED		8	NOT CONNECTED
9	NOT CONNECTED		9	NOT CONNECTED

2. Transmission setting

There are 6 different speeds that can be used to transmit instruction or information through
the RS232/RS485 port on the device, 1200 baud, 2400 baud, 4800 baud, 9600 baud,
19200 baud and 3840 baud.

The default setting from the factory is 9600 baud.

Please refer to Chart 6.10 (Page21) for details.

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3. Remote Control Protocol

A computer or a terminal can be used to control the unit by sending the packet as following.

1-1. Sample control code packets

Example1 : A packet that send "REC" key to DVR (ID=5)

0x85	(length)
0x00	(Receiver ID high byte)
0x05	(Receiver ID low byte)
0x4B	(OPcode = key)
0x08	(DATA1 = "Rec" keycode)
0x5D	(checksum)

Example2 : A packet that send "PAUSE" key to DVR (ID=4999)

0x85	(length)
0x27	(Receiver ID high byte)
0x07	(Receiver ID low byte)
0x4B	(OPcode = key)
0x0C	(DATA1 = "Pause" keycode)
0x0A	(checksum)

Example3 : A packet that send "PLAY" key to all DVR (broadcast)

0x85	(length)
0x7f	(Receiver ID high byte)
0x7f	(Receiver ID low byte)
0x4B	(OPcode = key)
0x0B	(DATA1 = "Play" keycode)
0x59	(checksum)

2-1. The format of message packet is as follows:

Length Byte (Prefix: 0x86, 0x87, or 0x88 .....)

Receiver ID high byte

Receiver ID low byte

Opcode Byte

Data Byte1

Data Byte2

Data Byte3

Checksum Byte

2-2. Length Byte

This Length Byte is also a prefix. Bit7 must be 1.

EX: 0x87 ==> this packets has 7 bytes length. (not included Length byte itself)

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2-3. Receiver ID

2-3. Receiver ID

1). Individual receiver ID

Decimal	14bit binary value	Hbyte	Lbyte	Receiver ID (EDSR)
0	0000000 0000000	00	00	ID = 0
1	0000000 0000001	00	01	ID = 1
2	0000000 0000010	00	02	ID = 2
....				
126	0000000 1111110	00	7e	ID = 126
127	0000000 1111111	00	7f	ID = 127
128	0000001 0000000	01	00	ID = 128
129	0000001 0000001	01	01	ID = 129
255	0000001 1111111	01	7f	ID = 255
256	0000010 0000000	02	00	ID = 256
....				
511	0000011 1111111	03	7f	ID = 511
....				
16382	1111111 1111110	7f	7e	ID = 16382

2). Broadcast ID

Decimal	14bit binary value	Hbyte	Lbyte	Receiver ID
16383	1111111 1111111	7f	7f	all EDSR connect to RS485/RS232

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2-4. Opcode Byte & Data bytes

2-4-1. OPcode

OPcode	Data1	Function
0x4B	Keycode	A remote key pressed
0x4D	command	Matrix command

2-4-2. Remote keys (OPcode=0x4B)

Data1	Key	Data1	Key
0x00	CH1	0x1e	JOG<
0x01	CH2	0x1f	JOG>
0x02	CH3	0x20	CH5
0x03	CH4	0x21	CH6
0x04	MODE	0x22	CH7
0x05	ZOOM	0x23	CH8
0x06	SEQ	0x24	CH9
0x07	MENU	0x25	CH10
0x08	REC	0x26	CH11
0x09	REV.PLAY	0x27	CH12
0x0A	STOP	0x28	CH13
0x0B	PLAY	0x29	CH14
0x0C	PAUSE	0x2a	CH15
0x0D	SEARCH	0x2b	CH16
0x0E	COPY	0x2c	SELECT
0x0F	DISPALY	0x2d	CALL
0x10	SHUTTLE<<x1	0x2e	ENTER
0x11	SHUTTLE<<x2	0x2f	(reserve)
0x12	SHUTTLE<<x4	0x30	(reserve)
0x13	SHUTTLE<<x8	0x31	(reserve)
0x14	SHUTTLE<<x16	0x32	(reserve)
0x15	SHUTTLE<<x32	0x33	(reserve)
0x16	SHUTTLE<<x600	0x34	(reserve)
0x17	SHUTTLE>>x1		
0x18	SHUTTLE>>x2		
0x19	SHUTTLE>>x4		
0x1a	SHUTTLE>>x8		
0x1b	SHUTTLE>>x16		
0x1c	SHUTTLE>>x32		
0x1d	SHUTTLE>>x600		

**2-4-3. Matrix command
(OPcode=0x4D)**

| Data1	Matrix function	Data1	Matrix function	Data1	Matrix function
0x00	Matrix monitor0 - ch01 spot	0x21	Matrix monitor2 - ch02 spot	0x42	Matrix monitor4 - ch03 spot
0x01	Matrix monitor0 - ch02 spot	0x22	Matrix monitor2 - ch03 spot	0x43	Matrix monitor4 - ch04 spot
0x02	Matrix monitor0 - ch03 spot	0x23	Matrix monitor2 - ch04 spot	0x44	Matrix monitor4 - ch05 spot
0x03	Matrix monitor0 - ch04 spot	0x24	Matrix monitor2 - ch05 spot	0x45	Matrix monitor4 - ch06 spot
0x04	Matrix monitor0 - ch05 spot	0x25	Matrix monitor2 - ch06 spot	0x46	Matrix monitor4 - ch07 spot
0x05	Matrix monitor0 - ch06 spot	0x26	Matrix monitor2 - ch07 spot	0x47	Matrix monitor4 - ch08 spot
0x06	Matrix monitor0 - ch07 spot	0x27	Matrix monitor2 - ch08 spot	0x48	Matrix monitor4 - ch09 spot
0x07	Matrix monitor0 - ch08 spot	0x28	Matrix monitor2 - ch09 spot	0x49	Matrix monitor4 - ch10 spot
0x08	Matrix monitor0 - ch09 spot	0x29	Matrix monitor2 - ch10 spot	0x4a	Matrix monitor4 - ch11 spot
0x09	Matrix monitor0 - ch10 spot	0x2a	Matrix monitor2 - ch11 spot	0x4b	Matrix monitor4 - ch12 spot
0x0a	Matrix monitor0 - ch11 spot	0x2b	Matrix monitor2 - ch12 spot	0x4c	Matrix monitor4 - ch13 spot
0x0b	Matrix monitor0 - ch12 spot	0x2c	Matrix monitor2 - ch13 spot	0x4d	Matrix monitor4 - ch14 spot
0x0c	Matrix monitor0 - ch13 spot	0x2d	Matrix monitor2 - ch14 spot	0x4e	Matrix monitor4 - ch15 spot
0x0d	Matrix monitor0 - ch14 spot	0x2e	Matrix monitor2 - ch15 spot	0x4f	Matrix monitor4 - ch16 spot
0x0e	Matrix monitor0 - ch15 spot	0x2f	Matrix monitor2 - ch16 spot	0x50	Matrix monitor0 - sequence
0x0f	Matrix monitor0 - ch16 spot	0x30	Matrix monitor3 - ch01 spot	0x51	Matrix monitor1 - sequence
0x10	Matrix monitor1 - ch01 spot	0x31	Matrix monitor3 - ch02 spot	0x52	Matrix monitor2 - sequence
0x11	Matrix monitor1 - ch02 spot	0x32	Matrix monitor3 - ch03 spot	0x53	Matrix monitor3 - sequence
0x12	Matrix monitor1 - ch03 spot	0x33	Matrix monitor3 - ch04 spot	0x54	Matrix monitor4 - sequence
0x13	Matrix monitor1 - ch04 spot	0x34	Matrix monitor3 - ch05 spot	0x60	Matrix monitor0 - turn OSD on
0x14	Matrix monitor1 - ch05 spot	0x35	Matrix monitor3 - ch06 spot	0x61	Matrix monitor1 - turn OSD on
0x15	Matrix monitor1 - ch06 spot	0x36	Matrix monitor3 - ch07 spot	0x62	Matrix monitor2 - turn OSD on
0x16	Matrix monitor1 - ch07 spot	0x37	Matrix monitor3 - ch08 spot	0x63	Matrix monitor3 - turn OSD on
0x17	Matrix monitor1 - ch08 spot	0x38	Matrix monitor3 - ch09 spot	0x64	Matrix monitor4 - turn OSD on
0x18	Matrix monitor1 - ch09 spot	0x39	Matrix monitor3 - ch10 spot	0x70	Matrix monitor0 - turn OSD off
0x19	Matrix monitor1 - ch10 spot	0x3a	Matrix monitor3 - ch11 spot	0x71	Matrix monitor1 - turn OSD off
0x1a	Matrix monitor1 - ch11 spot	0x3b	Matrix monitor3 - ch12 spot	0x72	Matrix monitor2 - turn OSD off
0x1b	Matrix monitor1 - ch12 spot	0x3c	Matrix monitor3 - ch13 spot	0x73	Matrix monitor3 - turn OSD off
0x1c	Matrix monitor1 - ch13 spot	0x3d	Matrix monitor3 - ch14 spot	0x74	Matrix monitor4 – turn OSD off
0x1d	Matrix monitor1 - ch14 spot	0x3e	Matrix monitor3 - ch15 spot		
0x1e	Matrix monitor1 - ch15 spot	0x3f	Matrix monitor3 - ch16 spot		
0x1f	Matrix monitor1 - ch16 spoz	0x40	Matrix monitor4 - ch01 spot		
0x20	Matrix monitor2 - ch01 spot	0x41	Matrix monitor4 - ch02 spot		

2-5. Checksum Byte

Checksum is computed as the sum of all previous butye (includeing the length byte), then mask with 0x7f.

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Alarm I/O pin assignment

The alarm connector, **Figure 1**, is used to provide one sensor alarm input for each camera input.
For easy operation, an alarm extension board, **Figure 2**, is provided to connect to the alarm connector.

Each alarm input requires two wires, one wire connects to the desired alarm input pin, the second wire connects to the ground.The alarm signal assignment is shown at the following.

<Figure 1>
D-SUB 25 pin female connector (DVR)

<Figure 2>
PR16D00400 Alarm extension board
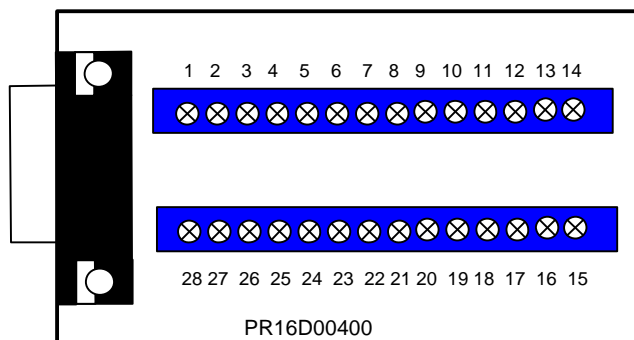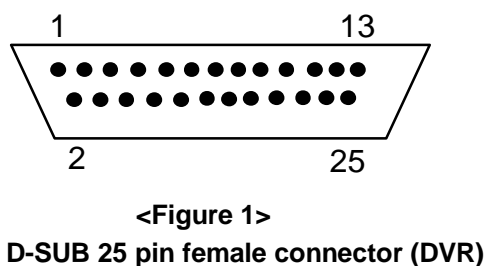
DVR

PIN #	NAME / Function
1	GND Ground
2	ALM 1 Alarm In 1
3	ALM 2 Alarm In 2
4	ALM 3 Alarm In 3
5	ALM 4 Alarm In 4
6	ALM 5 Alarm In 5
7	ALM 6 Alarm In 6
8	ALM 7 Alarm In 7
9	ALM 8 Alarm In 8
10	ALM 9 Alarm In 9
11	ALM 10* Alarm In 10
12	ALM 11* Alarm In 11
13	ALM 12* Alarm In 12
14	ALM 13* Alarm In 13
15	ALM 14* Alarm In 14
16	ALM 15* Alarm In 15
17	ALM 16* Alarm In 16
18	ALMRST Alarm Reset
19	REC Record In
20	GIN10 Reserved
21	DISKFULL Disk Full Out
22	GO1 Reserved
23	ALM-N.C Alarm Out N.C.
24	ALM-N.O Alarm Out N.C.
25	ALM-COM Alarm OUT COM

HOST	
PIN #	NAME
1	GND
2	ALM 1
3	ALM 2
4	ALM 3
5	ALM 4
6	ALM 5
7	ALM 6
8	GND
9	ALM 7
10	ALM 8
11	ALM 9
12	ALM 10*
13	ALM 11*
14	ALM 12*
15	ALM 13*
16	ALM 14*
17	ALM 15*
18	ALM 16*
19	ALMRST
20	REC-IN
21	GND
22	SPARE-IN
23	DISKFULL
24	SPARE-OUT
25	ALM-N.C
26	ALM-N.O
27	ALM-COM
28	GND

* ALM10~ALM16 are active only for EDSR-1600

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