TIME LAPSE RECORDER with DIGITAL SHUTTLE
960 HR / 40 HOUR REAL TIME - COMPUTER CONTROL
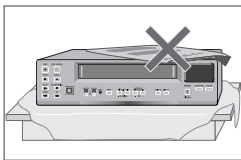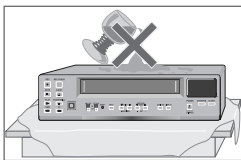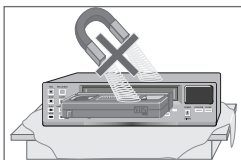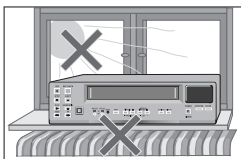
User's Guide

DV3K683DZ-SD

DAEWOO

Be sure to read carefully and follow all the SAFETY
INFORMATION on page i.
Keep the manual in a safe place for future reference.

Worth Knowing

Please keep the video machine's guarantee card and receipt safe for warranty purposes.

Precautions

◆ Read carefully through this manual to familiarize yourself with this high-quality Time Lapse video cassette recorder.

◆ Make sure the rating of your household electricity supply matches that shown on the back of the Time Lapse video cassette recorder.

◆ Refer to this chapter and the "Initial installation" chapter to help you install and adjust your Time Lapse video cassette recorder.

Do not ...

... expose the Time Lapse video cassette recorder to high levels of humidity and heat, to avoid the risk of fire and electric shock.

... open the Time Lapse video cassette recorder. Have a qualified technician carry out repairs.

... connect the Time Lapse video cassette recorder to the power supply if you have just moved it from a cold to warm environment. This can result in condensation inside the recorder and cause serious damage to the machine and cassettes. Wait around two hours to allow it to reach room temperature.

Make sure ...

... the recorder is placed on a steady, flat surface.

... you place the recorder where there is good ventilation all around.

... you clean the recorder only with a soft, lint-free cloth; do not use aggressive or alcohol-based cleaning agents.

... you disconnect the power supply if the recorder appears to be working incorrectly, is making an unusual sound, has a strange smell, has smoke emitting from it or liquids have got inside it. Have a qualified technician check the recorder.

... you disconnect the power supply and aerial if you will not be using the recorder for a long period or during a thunderstorm.

For your own safety!

◆ There are no components in this Time Lapse video cassette recorder you can service or repair yourself.

◆ Do not open the case of the Time Lapse video cassette recorder. Only allow qualified personnel to repair or service your set.

◆ This Time Lapse video cassette recorder is designed for continuous operation. Switching it off does not disconnect it from the mains (stand-by). To disconnect it from the mains, you have to unplug it.

◆ Recording any copyright protected material may infringe a copyright.

Contents

Locations of controls and indicators

Front panel
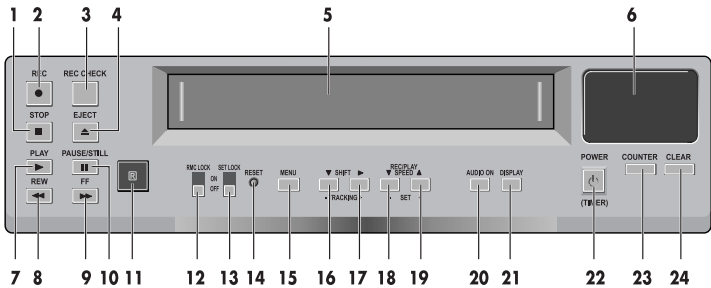
1	STOP button	16 SHIFT(▼) / TRACKING (-) button
2	REC button	17 SHIFT(►) / TRACKING (+) button
3	REC CHECK button	18 REC/PLAY SPEED(▼) button (SET - button)
4	EJECT button	19 REC/PLAY SPEED(▲) button(SET + button)
5	CASSETTE LOADING DOOR	20 AUDIO ON button
6	DISPLAY PANEL	21 DISPLAY button
7	PLAY button	22 STANDBY/ON button
8	REW button	23 COUNTER button
9	FF button	24 CLEAR button
10	PAUSE/STILL button	
11	REMOTE SENSOR	
12	HIGH-PICTURE switch	
13	SET LOCK switch	
14	RESET button	
15	MENU button	

Digital Display

1 Operation Indicators display the actual operation mode.

	Operation Mode	Indicator
1	Record (REC)	REC
2	Record pause (REC PAUSE)	REC + ❚❚
3	Playback (PLAY)	▶
4	Still image (STILL)	▶ + ❚❚
5	Fast forward (FF)	▶▶
6	Rewind (REW)	◀◀
7	CUE (CUE)+	▶ + ▶▶
8	Review (REVIEW)+	▶ + ◀◀
9	Slow (Pause Still + FF, Pause Still + REW)	❚❚ + ☼

2 Cassette indicator : ●●
Comes on when a cassette is loaded.

3 Record check indicator : REC
Flashes on during record check.

4 Alarm indicator : ((▶
Flashes on when an alarm is being recorded and stops flashing after alarm recording.

5 Timer Recording indicator : ▭
Comes on when in timer recording stand-by mode, or during a timer recording.

6 Power Loss indicator : ➤
Flashes on after power loss.

7 CNT indicator : CNT
Comes on when the tape or alarm counter is on.

8 SPD indicator : SPD
Comes on when the play or recording speed is on.

9 HIGH PICTURE indicator : H.P
Comes on when the HIGH PICTURE sw is set to the "ON" position.

10 S.REC indicator : S.REC
Comes on when "YES" is selected in the menu for the series recording.

11 R.REC indicator : R.REC
Comes on when "YES" is selected in the menu for the repeat recording.

12 SET LOCK SW indicator : ⟒
Comes on when the SET LOCK sw is set to the "ON" position.

13 Mode display

 • **TAPE COUNTER** display (eg:10:HOUR,59:MINUTE)
- Maximum Hour : 19 - Maximum Minute : 59

 • **ALARM COUNTER** display (eg: A:Alarm , 32:Alarm No.)

 • **PLAY/REC SPEED** display (eg: 30H:Play/Recording Speed)

 • **TIME** display (eg: 7:HOUR , 07:MINUTE)

 • **ERROR** display (eg: E:Error , 04:Error No.)
- E-01 : The cassette cannot be loaded or unloaded.
- E-02 : The tape stops.
- E-03 : The drum can not rotate properly.
- E-04 : The tape is cut/broken.

 • **AUDIO ON** display (eg: A:Audio , 18H:Play Speed)

Back Panel
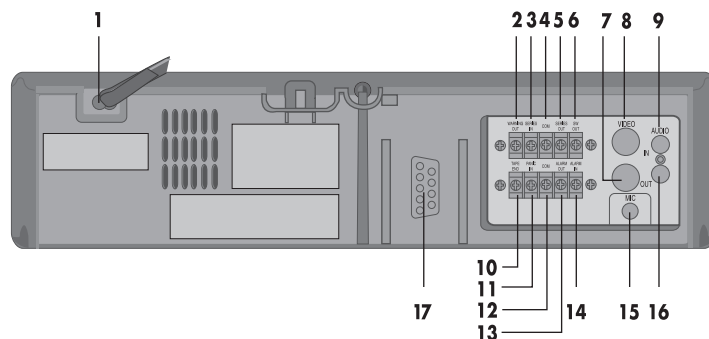
1 AC POWER CORD

2 WARNING OUT terminal

3 SERIES IN terminal

4 COM terminal

5 SERIES OUT terminal

6 SW OUT terminal

7 VIDEO OUT jack

8 VIDEO IN jack

9 AUDIO IN jack

10 TAPE END terminal

11 PANIC IN terminal

12 COM terminal

13 ALARM OUT terminal

14 ALARM IN terminal

15 MIC(microphone input) jack

16 AUDIO OUT jack

17 RS-232C jack

Remote Control
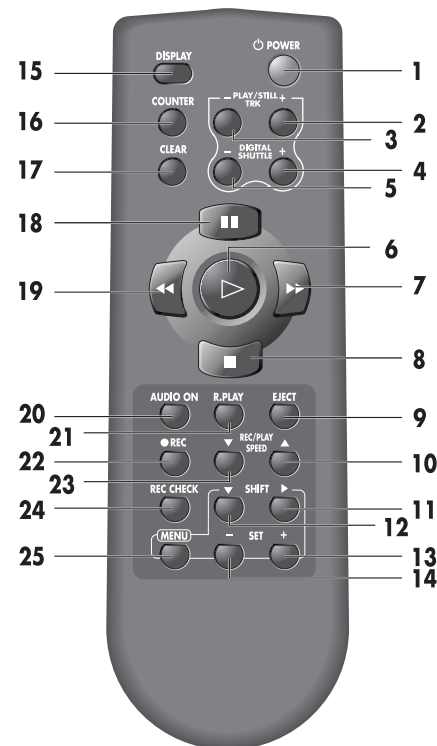
1 POWER button

2 PLAY/STILL TRACKING + button

3 PLAY/STILL TRACKING - button

4 DIGITAL SHUTTLE + button

5 DIGITAL SHUTTLE - button

6 PLAY ► button

7 FF ►► button

8 STOP ■ button

9 EJECT button

10 REC/PLAY SPEED ▲ button

11 SHIFT ► button

12 SHIFT ▼ button

13 SET + button

14 SET - button

15 DISPLAY button

16 COUNTER button

17 CLEAR button

18 PAUSE/STILL button

19 REW ◄◄ button

20 AUDIO ON button

21 REVERSE PLAY button

22 ● REC button

23 REC/PLAY SPEED ▼ button

24 REC CHECK button

25 MENU button

Connections

Connect the video camera and monitor TV as shown in the figure below.

NOTE : Make sure to turn the power off on all devices before making the connections.

Monitor TV (sold separately)

Video camera (sold separately)

To VIDEO IN terminal

From an external audio source

RS-232C Cable

To VIDEO OUT terminal

Computer (sold separately)
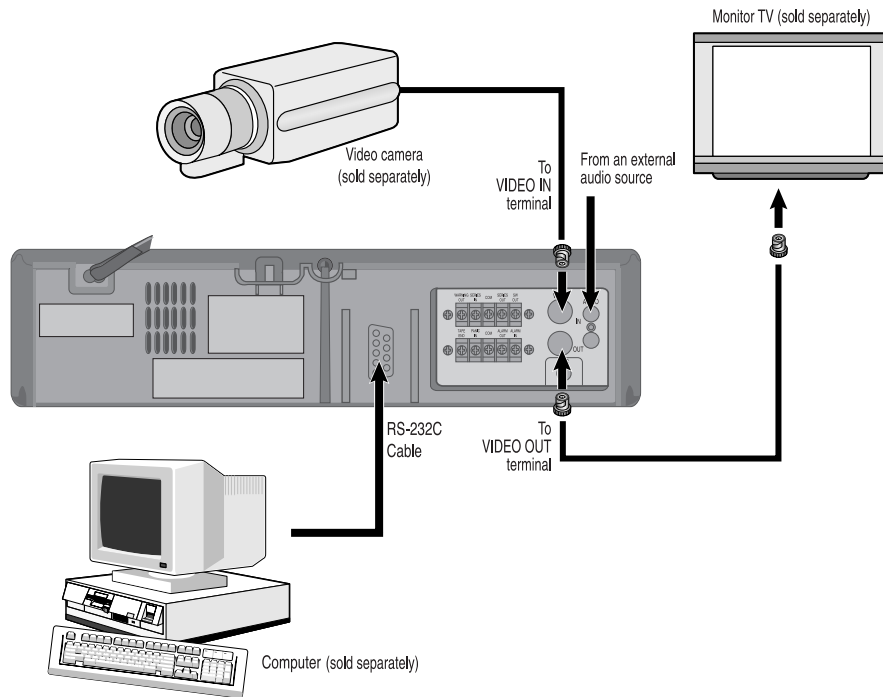
Power Cord Installation

Insert the plug of the power cord into an outlet.

- **For more details**, please refer to the manuals accompanying all other devices. If the connections are not made properly, it may cause a fire or damage the equipment.

- **For RS-232C connection with computer and its operation**, refer to the additional RS-232C serial communication manual.

Video Cassettes Tapes

Use only video cassette tapes bearing the **VHS** logo.

This VCR was primarily designed for use with E-180 cassette tapes. It is recommended to use E-180 VHS or E-240 VHS video cassette tapes for optimal performance.

✔

- *If you try to record on a cassette without the erasure-prevention tab, the VCR will eject the cassette.*

- *If the TIMER button is pressed when a cassette without the erasure-prevention tab is loaded, the VCR will eject the cassette, the timer recording indicator ( ) will start flashing and a buzzer will sound if "YES" is set in the menu for buzzer.*

✔

- *When the cassette is loaded, the cassette indicator " ⊶ " will light on the display panel.*

- *The counter display will switch to the reset counter "0H 00M 00S" display on the monitor screen. ("0H 00M" on the display panel.)*

✔

- *Do not insert any object in the cassette loading slot, as that may cause injury and damage to the VCR.*

- *If your hand gets stuck in the cassette loading slot, unplug the power cord and consult the dealer where the unit was bought. Do not forcibly pull the hand out as that may cause severe injuries.*

Handling Cassette Tapes

Cassette tapes should always be stored vertically in their cases, away from high temperatures, magnetic fields, direct sunlight, dirt, dust and locations subject to mold formation.

Do not tamper with the cassette mechanism.

Never touch the tape with your fingers.

Protect cassette tapes from shocks or strong vibrations.

To Protect your recordings

After having recorded a tape, if you wish to keep the recording, use a flathead screwdriver to break off the erasure-prevention tab on the cassette.

To record again on a tape without erasure-prevention tab, cover the hole with adhesive tape.
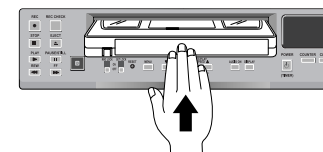
Erasure-prevention tab

To prevent accidental erasure, remove the tab after recording.

To record again, cover the hole with vinyl tape.

Loading

Place the cassette, label side up, in the loading slot. Gently push the center of the cassette until it is loaded automatically.
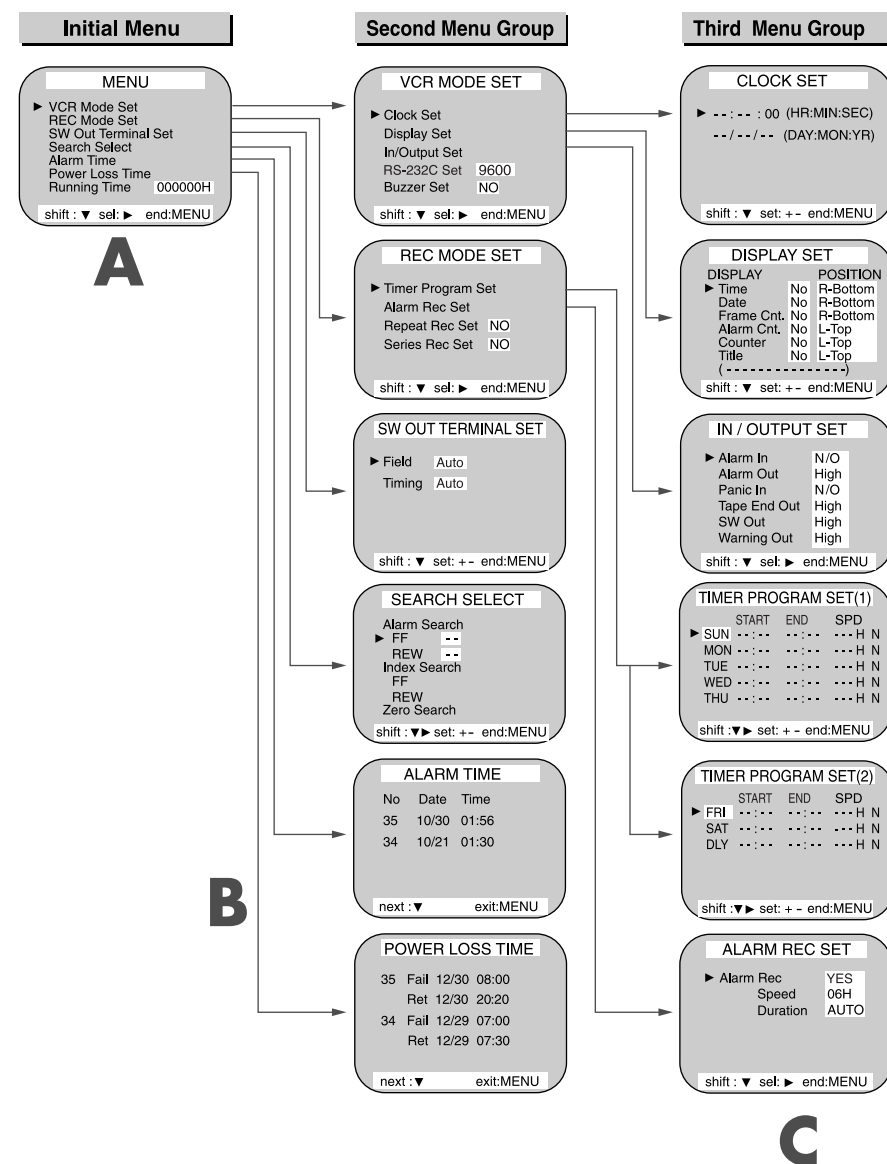
Unloading

In STOP mode, press the EJECT button. The cassette is automatically ejected.

Types of On-screen displays and Display Sequence

- If the VCR is in timer recording stand-by mode (the " ⊟ " indicator is displayed on the display panel), the on-screen displays will not be available. First press the POWER(STANDBY/ON) button, to cancel the recording stand-by mode, then proceed with the VCR programming. When finished, press the POWER(STANDBY/ON) button again to return the VCR to timer recording stand-by mode.
- When a menu is displayed, recording will not be possible.
- Press the MENU button three times, the setting procedure is now completed and the normal screen is displayed.
- During recording or playback the menus cannot be displayed.

A
- Press the MENU button. (First time)
- Press the SHIFT ▼ button to move the arrow mark (▶) downward for the desired item.
- Press the SHIFT ▶ button to select the desired item, then the desired menu is displayed.
- Press the MENU button to return to the normal screen from the initial menu.

B
- Press the SHIFT ▶ button to select the desired item.
- Press the SET - (or +) button to set or Press the SHIFT ▶ button to select "YES" or "NO".
- Press the MENU button to return to the initial menu.

C
- Press the SHIFT ▶ (or SHIFT ▼)button to select the desired item.
- Press the SET - (or +) button to set or Press the SHIFT ▶ button to select.
- Press the MENU button to return to the previous menu.

Initial Menu

```
            MENU
 ▶ VCR Mode Set
   REC Mode Set
   SW Out Terminal Set
   Search Select
   Alarm Time
   Power Loss Time
   Running Time    000000H

 shift : ▼  sel: ▶  end:MENU
```

A

Second Menu Group

```
         VCR MODE SET
 ▶ Clock Set
   Display Set
   In/Output Set
   RS-232C Set   9600
   Buzzer Set      NO

 shift : ▼  sel: ▶  end:MENU
```

```
         REC MODE SET
 ▶ Timer Program Set
   Alarm Rec Set
   Repeat Rec Set   NO
   Series Rec Set   NO

 shift : ▼  sel: ▶  end:MENU
```

```
      SW OUT TERMINAL SET
 ▶ Field    Auto
   Timing   Auto

 shift : ▼  set: + -  end:MENU
```

```
         SEARCH SELECT
   Alarm Search
 ▶  FF        - -
    REW       - -
   Index Search
    FF
    REW
   Zero Search
 shift : ▼ ▶ set: + -  end:MENU
```

```
          ALARM TIME
   No    Date   Time
   35   10/30  01:56
   34   10/21  01:30

 next :▼          exit:MENU
```

```
        POWER LOSS TIME
   35  Fail 12/30  08:00
       Ret  12/30  20:20
   34  Fail 12/29  07:00
       Ret  12/29  07:30

 next :▼          exit:MENU
```

B

Third Menu Group

```
          CLOCK SET
 ▶ - - : - - : 00  (HR:MIN:SEC)
   - - / - - / - -  (DAY:MON:YR)

 shift : ▼  set: + -  end:MENU
```

```
         DISPLAY SET
 DISPLAY          POSITION
 ▶ Time      No   R-Bottom
   Date      No   R-Bottom
   Frame Cnt. No  R-Bottom
   Alarm Cnt. No  L-Top
   Counter   No   L-Top
   Title     No   L-Top
   ( - - - - - - - - - - - - - )
 shift : ▼  set: + -  end:MENU
```

```
        IN / OUTPUT SET
 ▶ Alarm In        N/O
   Alarm Out       High
   Panic In        N/O
   Tape End Out    High
   SW Out          High
   Warning Out     High
 shift : ▼  sel: ▶  end:MENU
```

```
      TIMER PROGRAM SET(1)
         START    END    SPD
 ▶ SUN - - : - -  - - : - -  - - -  H  N
   MON - - : - -  - - : - -  - - -  H  N
   TUE - - : - -  - - : - -  - - -  H  N
   WED - - : - -  - - : - -  - - -  H  N
   THU - - : - -  - - : - -  - - -  H  N
 shift :▼ ▶ set: + -  end:MENU
```

```
      TIMER PROGRAM SET(2)
          START    END    SPD
 ▶ FRI - - : - -  - - : - -  - - -  H  N
   SAT - - : - -  - - : - -  - - -  H  N
   DLY - - : - -  - - : - -  - - -  H  N

 shift :▼ ▶ set: + -  end:MENU
```

```
         ALARM REC SET
 ▶ Alarm Rec       YES
    Speed          06H
    Duration       AUTO

 shift : ▼  sel: ▶  end:MENU
```
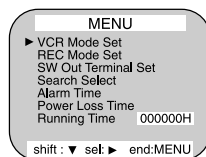
C

Setting the Clock

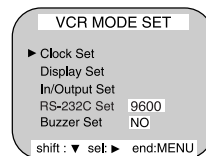Example: To set the clock to April 12, 2001 at 9:30

Clock Setting

1   Turn the power on to all devices used.

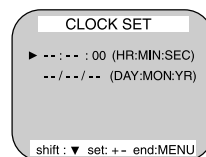2   Press the MENU button, the initial MENU is displayed. The arrow mark (►) is located in "VCR Mode Set".

Initial MENU

```
         MENU
► VCR Mode Set
  REC Mode Set
  SW Out Terminal Set
  Search Select
  Alarm Time
  Power Loss Time
  Running Time    000000H

  shift : ▼  sel: ►   end:MENU
```

3   Press the SHIFT ► button, the VCR MODE SET menu is displayed. The arrow mark (►) is located in "Clock Set".

```
      VCR MODE SET
► Clock Set
  Display Set
  In/Output Set
  RS-232C Set   9600
  Buzzer Set    NO

  shift : ▼  sel: ►   end:MENU
```

4   Press the SHIFT ► button, the CLOCK SET menu is displayed.

```
       CLOCK SET
► -- : -- : 00  (HR:MIN:SEC)
  -- / -- / --  (DAY:MON:YR)



  shift : ▼  set: + -  end:MENU
```

5   Press the SET - (or +) button to set the hours (eg : 09), then press the SHIFT ► button.

6   Press the SET - (or +) button to set the minutes (eg : 30), then press the SHIFT ► button.

7   The seconds are already set to "00".

8   Press the SHIFT ► button.

9   Press the SET - (or +) button to set the month (eg : 04), then press the SHIFT ► button.

10   Press the SET - (or +) button to set the day (eg : 12), then press the SHIFT ► button.

11   Press the SET - (or +) button to set the year (eg : 01 for 2001).

   • *The last 2 digits only are displayed.*

   • *The day of the week is set automatically.*

12   Press the MENU button three times, the normal screen is displayed.

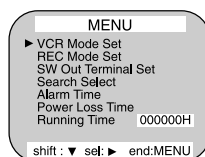   • *The setting procedure is now complete.*

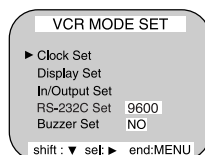# Changing the On-Screen Display

Selecting the On-screen Display

You can select whether or not to display the time, date, frame counter, alarm counter, counter title.

1 Turn the power on to all devices used.

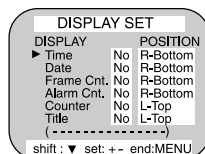2 Press the MENU button. The initial MENU is displayed. The arrow mark (▶) is located in "VCR Mode Set".

Initial MENU

```
        MENU
 ▶ VCR Mode Set
   REC Mode Set
   SW Out Terminal Set
   Search Select
   Alarm Time
   Power Loss Time
   Running Time    000000H

shift : ▼  sel: ▶   end:MENU
```

3 Press the SHIFT ▶ button to select the VCR Mode Set, then the VCR MODE SET menu is displayed.

```
       VCR MODE SET

 ▶ Clock Set
   Display Set
   In/Output Set
   RS-232C Set   9600
   Buzzer Set    NO

shift : ▼  sel: ▶   end:MENU
```

4 Press the SHIFT ▼ button, until the arrow mark (▶) points "Display set".

5 Press the SHIFT ▶ button to select Display Set, then the DISPLAY SET menu is displayed.

```
        DISPLAY SET
 DISPLAY          POSITION
 ▶ Time      No  R-Bottom
   Date      No  R-Bottom
   Frame Cnt. No  R-Bottom
   Alarm Cnt. No  R-Bottom
   Counter   No  L-Top
   Title     No  L-Top
 (---------------)
 shift : ▼  set: +–  end:MENU
```

✔

- *The items for which "YES" is set are recorded. The items for which "NO" is set at step 6 above are not recorded.*

6 Press the SET - (or +) button to set "YES" for the functions described below.

Time................The time is displayed.

Date ....The Month-Day-Year is displayed.

Frame Cnt ....The number of frames is displayed.

Alarm Cnt........The number of alarms is displayed.

Counter ....The counter is displayed.

Title................The title is displayed.

- *A maximum of 20 characters can be used. (letters, numbers or spaces)*

7 Press the SHIFT ▶ button to set the display position.

8 Press the SET - (or +) button to set the position of the time, date, frame cnt. alarm cnt. to "L-Bottom (or R-Bottom)".

- *If any of 4 items is set, the position of 4 items is changed identically.*

9 Press the SET - (or +) button to set the position of the counter and title to "C-Top" (or "R-Top" or "L-Top").

If one of 2 items is set, the position of 2 items is changed identically.

L-Top / C-Top / R-Top

: Left Top / Center Top / Right Top

L-Bottom / R-Bottom

: Left Bottom / Right Bottom

10 Press the MENU button three times, the normal screen is displayed.

The setting procedure is now complete.

Normal Recording

✔

- *If the Repeat Rec Set is set to "NO" in the REC MODE SET menu , recording will continue to the end of the tape, then stop and the tape will be ejected.*

✔

- *A tape recorded on this VCR cannot be played back on another make of time lapse VCR.*
- *If you press on the REC button and the loaded cassette has no erasure-prevention tab, the VCR will eject the cassette.*
- *During recording, the Menu button will not function (the menu cannot be accessed).*

✔

- *If you playback the recorded part where recording check was performed, noise may appear.*
- *If you change the recording speed during recording, noise or missing signal may result.*

Normal Recording

1 Turn the power on to all devices used.

2 Load a cassette tape with erasure prevention tab in place.

3 Press the REC/PLAY SPEED ▼ (or ▲) button to set the recording speed.

- *The recording speed is displayed on-screen and on the display panel.*
- *If you don't want to record the recording speed, counter, title, time, date etc, press the DISPLAY button, then start recording.*

4 Press the REC button.

- *The "REC" indicator is displayed on the display panel and recording starts.*

5 To stop recording, press the STOP button.

<Recording Speed>

Recording Speeds & Duration	Recording Duration E-180	Recording Intervals	Rec. Fields / Sec.	Audio Record-ing	Tape Motion
3(SP)	3	1/50 Sec	50		
6(LP)	6	1/50 Sec	50	YES	Continuous
18(LP)	18	3/50 Sec	16.67		
30(LP)	30	5/50 Sec	10		
48(SP)	48	16/50 Sec	3.13		
72(SP)	72	0.48	2.08		
168(SP)	168	1.12	0.89		
240(SP)	240	1.6	0.62	NO	Intermittent
480(SP)	480	3.2	0.31		
720(SP)	720	4.8	0.20		
960(SP)	960	6.4	0.15		

✎ (SP) means to be recorded by SP heads.
   (EP) means to be recorded by EP heads.

✔

- *During pause, the image appears on screen but it is not recorded.*
- *If a recording pause continues for 5 minutes or more, the VCR will go into stop mode to avoid damage to the tape.*

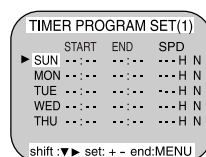## Record Pause

Recording can be interrupted temporarily.

1 Press the PAUSE/STILL button during recording.

- *The "REC" and " ▌▌ " indicators are displayed on the display panel.*

2 To resume recording, press the REC button, or press the PAUSE/STILL button again.

Program Timer Recording

There are two program timer recording methods, daily recording or recording on certain days of multiple weeks (weekly recording).

Example 1 : To record on every Thursday from 10 : 00 to 18 : 00 , in 18-hour mode (recording speed)

1 Make sure that the set date and time are correct.

2 Load a cassette tape with erasure prevention tab in place.

3 Press the MENU, SHIFT ▼ , SHIFT ▶ , SHIFT ▶ buttons in sequence to display the TIMER PROGRAM SET(1) menu.

```
┌─────────────────────────────┐
│   TIMER PROGRAM SET(1)       │
│                              │
│         START   END    SPD   │
│  ▶ SUN  --:--   --:--  ---H N │
│    MON  --:--   --:--  ---H N │
│    TUE  --:--   --:--  ---H N │
│    WED  --:--   --:--  ---H N │
│    THU  --:--   --:--  ---H N │
│                              │
│  shift :▼▶ set: + – end:MENU │
└─────────────────────────────┘
```

• *The white block cursor is on "SUN"(Sunday).*

4 Press the SHIFT ▼ button, until the cursor is on "THU".

5 Press the SHIFT ▶ button.

• *The cursor is moved to the recording start hour position.*

6 Press the SET - (or +) button to set the recording start hour (eg : 10), then press the SHIFT ▶ button.

• *The cursor is moved to the recording start minutes position.*

7 Press the SET - (or +) button to set the recording start minute (eg : 00), then the SHIFT ▶ button.

• *The cursor is moved to the recording stop hour position.*

8 Press the SET - (or +) button to set the recording stop hour (eg : 18), then press the SHIFT ▶ button.

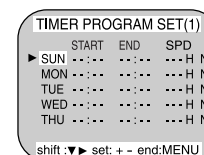• *The cursor is moved to the recording stop minutes position.*

✔

• *If the set stop time is earlier than or the same time as the set start time, the VCR will consider the stop time to be the following day.*

9 Press the SET - (or +) button to set the recording stop minutes (eg : 00), then press the SHIFT ▶ button.

10 Press the SET - (or +) button to select the recording speed (eg : 18), then press the SHIFT ▶ button.

• *The cursor is moved to the N/Y position.*

11 Press the SET - (or +) button to select "Y".

Y . . . . . recording will take place

N . . . . . recording will not take place

Programmed timer recording Example 1

```
┌─────────────────────────────┐
│   TIMER PROGRAM SET(1)       │
│                              │
│         START   END    SPD   │
│  ▶ SUN  --:--   --:--  ---H N │
│    MON  --:--   --:--  ---H N │
│    TUE  --:--   --:--  ---H N │
│    WED  --:--   --:--  ---H N │
│    THU  --:--   --:--  ---H N │
│                              │
│  shift :▼▶ set: + – end:MENU │
└─────────────────────────────┘
```

• *Repeat steps 4 to 11 to program timer recordings for other days of the week.*

• *To set two or more timer recordings the same day of the week, press the SHIFT ▼ button, until the cursor located in the day of the week for the second recording, then press the SET - (or +) button, to set the desired day of the week. With each press of the SET - (or +) button, the day will change as indicated below.*

SET - : ← direction , SET + : → direction
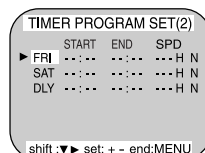
┌→ SUN ↔ MON ↔ TUE ↔ WED ↔ THU ↔ FRI ↔ SAT ↔ DLY ←┐

✔
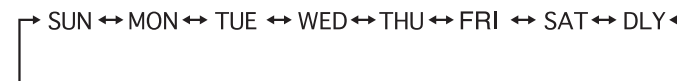
• *To modify or cancel timer recording, press the POWER(STANDBY/ON) button to cancel the timer recording mode.*

12 Press the MENU button three times, the normal screen is displayed.

13 Press the POWER(STANDBY/ON) button.

• *The timer recording indicator " ▭"will light on the display panel. The VCR is now in timer recording stand-by mode.*
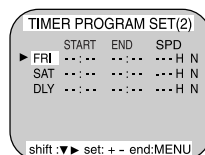
Example 2 : To record everyday from 10 : 00 to 18 : 00, in 18-hour mode (recording speed)

1 Repeat steps 1 to 3.

2 Press the SHIFT ▼ button, until the cursor is on "DLY". The MENU below is displayed.

```
 TIMER PROGRAM SET(2)
        START   END    SPD
► FRI  --:--   --:--  ---H N
  SAT  --:--   --:--  ---H N
  DLY  --:--   --:--  ---H N


 shift :▼► set: + – end:MENU
```

3 Repeat steps 5 to 13.

Programmed timer recording Example 2

```
 TIMER PROGRAM SET(2)
        START   END    SPD
► FRI  --:--   --:--  ---H N
  SAT  --:--   --:--  ---H N
  DLY  --:--   --:--  ---H N


 shift :▼► set: + – end:MENU
```

Changing a Program Timer Recording

1 Press the MENU, SHIFT ▼ , SHIFT ► , SHIFT ► buttons in sequence to display the TIMER PROGRAM SET(1) menu.

2 Press the SHIFT ► (or ▼) button, until the cursor is located in the setting to correct.

3 Press the SET - (or +) button, to correct the setting.

• *Press the MENU button three times until the normal screen is displayed.*
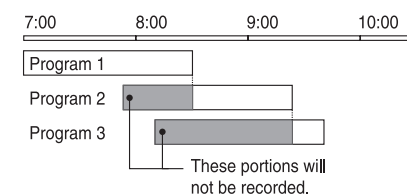
4 Press the POWER(STANDBY/ON) button.

To Cancel a Program Timer Recording

1 Repeat step 1 above.

2 Press the SHIFT ► (or ▼) button until the cursor is located in the "Y" corresponding to the timer recording to cancel.

3 Press the SET - (or +) button, to select "N".

4 Press the MENU button three times until the normal screen is displayed.

5 Press the POWER(STANDBY/ON) button.

• *The clear button can erase the programmed timer recording in the line that the cursor is located.*

Notes...

• During timer recording all the buttons on the VCR, except the STOP button, are disabled. If the STOP button is pressed for three seconds during timer recording, the recording will stop. During timer recording stand-by, press the POWER(STANDBY/ON) button if the buttons do not respond.

• If there is a power loss, the recording will be interrupted. When the power is restored, the recording will resume if the stop time has not yet been reached, and "☛" will be flashing on the display panel. The VCR internal battery is completely charged after the VCR has been connected to an AC power outlet for 48 hours, and it will maintain all the VCR settings memory for up to 30 days.

• Set the timer recordings so that the recording times do not overlap. If they do, the one with the earliest recording start time will have priority.
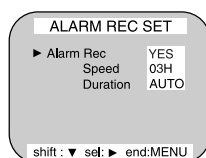(See chart below)

```
7:00        8:00        9:00        10:00
───────────────────────────────────────────
Program 1  [          ]
Program 2      [•▓▓▓▓▓          ]
Program 3          [•▓▓▓▓▓▓▓          ]
                   │  These portions will
                      not be recorded.
```

• If the cassette tape is ejected while timer recording is set, the buzzer will be heard 5 times (when the buzzer function is set to "YES".)

Alarm Recording

Alarm Recording Setting

Alarm recording is performed when there is an input (trigger) at the ALARM IN terminal, "⟨☛⟩" is displayed on the display panel.

1 Make all necessary connections.

2 Press the MENU, SHIFT ▼ , SHIFT ► buttons in sequence to display the REC MODE SET menu .

3 Press the SHIFT ▼ button until the arrow mark (►) points to ALARM REC SET.

4 Press the SHIFT ► button to display the ALARM REC SET menu.

```
        ALARM REC SET

  ► Alarm Rec     YES
       Speed      03H
       Duration   AUTO


  shift : ▼  sel: ►  end:MENU
```

5 Press the SHIFT ► button to select "YES" or "NO".

  • YES . . . .The alarm recording takes place when there is alarm trigger input
  • NO . . . . The alarm recording does not take place

6 Press the SHIFT ▼ button to set the Alarm speed.

7 Press the SHIFT ► button to select the desired recording speed.

  • 3H . . . 3-hour mode recording
  • 6H . . . 6-hour mode recording
  • 18H . . 18-hour mode recording
  • 30H . . 30-hour mode recording

8 Press the SHIFT ▼ button to set the alarm duration.

9 Press the SHIFT ► button to select the desired recording duration.

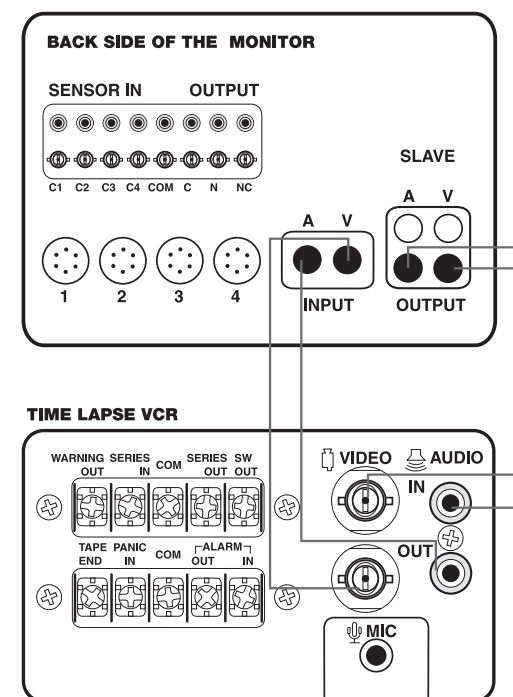 • Auto : Records as long as the alarm signal is being input.   (Minimum 2 minutes is recorded.)

  • Auto / 20sec / 30sec / 40sec / 01min / 02min / 3min / 5min / 10min / 15min / 20min / 25min / 30min : Recording for the set duration. (min : minute)

  • T.END : Records until the tape end is reached when there is alarm trigger input.

Alarm Recording Counter Display
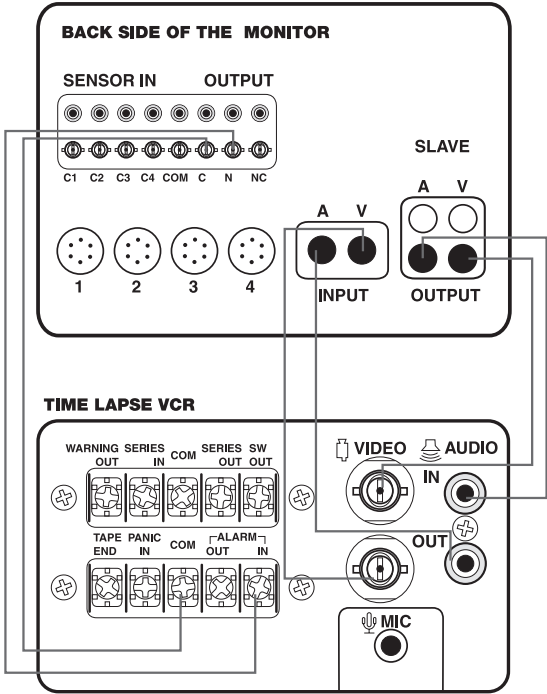
During alarm recording, " ⟨☛⟩ " will be flashing on the display panel.

The maximum display number of alarm triggers is "35", at the next alarm recording the counter will indicate "00".

Connecting to a Monitor for Normal Recording

Connecting to a Monitor for Alarm Recording

BACK SIDE OF THE MONITOR

SENSOR IN   OUTPUT

C1 C2 C3 C4 COM C N NC

1   2   3   4

A V
INPUT

SLAVE

A V
OUTPUT

TIME LAPSE VCR

WARNING SERIES COM SERIES SW
OUT   IN   OUT OUT

TAPE PANIC COM ⌐ALARM⌐
END   IN   OUT IN

VIDEO   AUDIO
IN

OUT

MIC

✔

- *During series recording, autorepeat recording or timer recording are not possible.*

- *If in the REC MODE SET menu, "Series Rec Set" is set to "NO", series recording will not be possible.*

Panic Recording

This feature is similar to an alarm recording, but the recording time is not pre-selected.

When there is a panic input at the PANIC IN Terminal, recording will start and continue for up to 3 hours.

Series Recording

Using 2 VCRs or more, the series recording function lets you switch recording from one unit to the next (only with VCRs of the same model as this one).
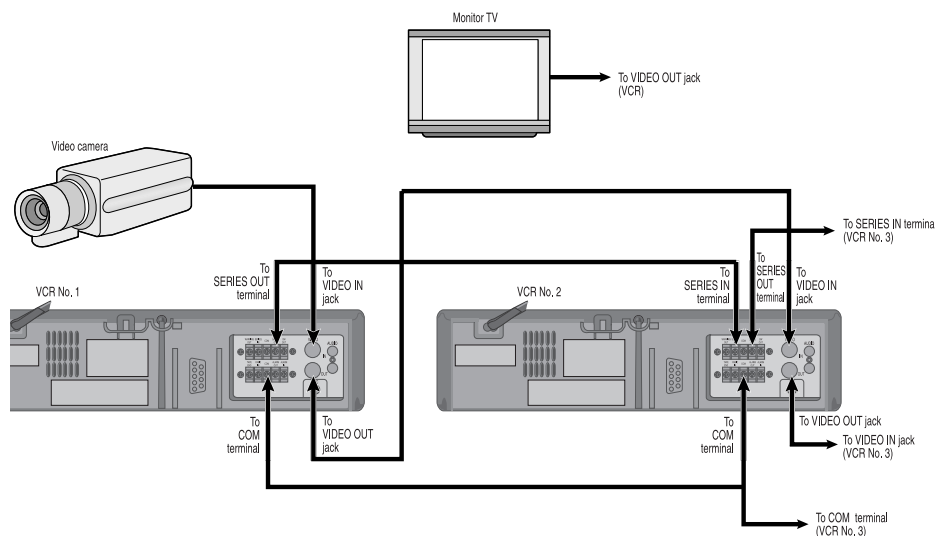
Series Recording Setup

1   Connect 2 VCRs or more as illustrated on next page.

2   Set the following items as indicated.

Item	VCR No.1	VCR No.2 and on
Cassette tape	Loaded	Loaded
Operation mode	Stop	Stop
Repeat Rec Set	"NO"	"NO"
Series Rec Set	"YES"	"YES"
Timer recording	OFF (not set)	OFF (not set)
Security lock switch (SET LOCK switch)	"OFF"	"ON"

3   Press the REC button on VCR No.1.

- *Recording will start in series recording mode.*

4   Set the security lock on VCR No.1.

   • *When the end of the tape on VCR No.1 is reached, the output at the SERIES OUT terminal will switch signal. This will start recording on VCR No.2, the tape will stop and be ejected on VCR No.1.*

```
        REC MODE SET

  ▶ Timer Program Set
    Alarm Rec Set
    Repeat Rec Set   NO
    Series Rec Set   NO


    shift : ▼  sel: ▶   end:MENU
```

Monitor TV

To VIDEO OUT jack
(VCR)

Video camera

To SERIES IN terminal
(VCR No. 3)

VCR No. 1

To
SERIES OUT
terminal

To
VIDEO IN
jack

VCR No. 2

To
SERIES IN
terminal

To
SERIES
OUT
terminal

To
VIDEO IN
jack

To
COM
terminal

To
VIDEO OUT
jack

To
COM
terminal

To VIDEO OUT jack

To VIDEO IN jack
(VCR No. 3)

To COM terminal
(VCR No. 3)

Autorepeat Recording

Autorepeat Recording

The same tape can be recorded over many times. Please note that if you activate this feature you will lose the entire previous recording.

1   Press the MENU, SHIFT ▼ , SHIFT ▶ button in sequence to display the REC MODE SET menu.

```
        REC MODE SET

  ▶ Timer Program Set
    Alarm Rec Set
    Repeat Rec Set   NO
    Series Rec Set   NO


    shift : ▼  sel: ▶   end:MENU
```

✔
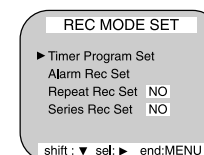
• *If during autorepeat recording there is an alarm trigger, " ◀◀▶ " is displayed on the display panel and alarm recording will take place. Autorepeat recording will continue after alarm recording has completed its programmed duration.*

2   Press the SHIFT ▶ button to make the arrow mark (▶) point to Repeat Rec Set.

3   Press the SHIFT ▶ button to set the desired autorepeat recording mode.

   NO . . . . . . Autorepeat recording doesn't take place.

   YES . . . . . Autorepeat recording takes place.

   "R.REC" will light on the display panel.

4   Press the MENU button two times, the normal screen is displayed.

   • *The setting procedure is now complete.*

5   Press the REC button.

   • *Recording will start. When the tape's end is reached, the VCR will rewind it to the beginning regardless of the counter memory, and recording will resume.*

Normal Playback

✔

- *A slow motion effect or accelerated playback effect can be achieved by using a slower or faster playback speed than the speed used for recording.*

Normal Playback

1 Turn on the power to the TV monitor.
2 Load the video cassette tape.
3 Press the REC/PLAY SPEED ▼ (or ▲) button to select the playback speed.
   - *The selected playback speed is displayed on the display panel.*
   - *A tape recorded with LP heads can be played in 6-hour, 18-hour, 30-hour, 48-hour .... or 960-hour modes.*
   - *A tape recorded with SP heads can be played in 3-hour, 12-hour, 24 -hour, 48-hour .... or 960-hour modes.*
   - *The picture quality recorded by LP heads can be lower than SP heads.*
4 Press the PLAY button.
   - *Playback starts.*
5 To stop playback, press the STOP button.
   - *To advanced or rewind the tape, press the FF/CUE or REW/REVIEW button.*

✔

- *If playback image isn't clear, adjust the screen by pressing TRACKING+/- button.*

Tracking Control

1 While looking at the playback picture, press and hold the TRACKING + button to minimize the noise.
2 If it cannot be minimized, press the TRACKING - button.
3 If there is noise in the image during playback, push the 'pause' button. Then, while looking at the paused picture press and hold the TRACKING + or - button until a clear stable picture is obtained.

✔

- *Noise will appear in the image when audio playback is used in 18-hour or 30-hour mode.*

Audio Playback

Audio playback is only possible in 3-hour, 6-hour, 18-hour and 30-hour modes.

The playback speed has to be the same as the recording speed, for normal playback of the audio.

For a tape recorded in 3-hour, 6-hour 18-hour and 30-hour modes,to playback the audio, press the AUDIO ON button after pressing the PLAY button. "A" will be displayed to the left of the playback speed on the display panel. Press the AUDIO ON button again to remove "A".
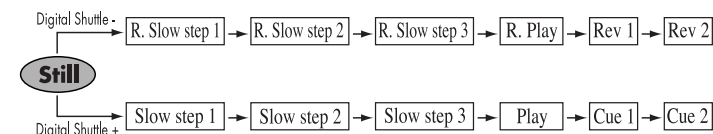
Special Playback

Digital Shuttle

1 To use this function with remote control
   - Press DIGITAL SHUTTLE +/- button on remote control in playback mode to enter into Digital Shuttle function.
   - Shuttle speed will change as follows :

Digital Shuttle - → R. Slow step 1 → R. Slow step 2 → R. Slow step 3 → R. Play → Rev 1 → Rev 2

Still

Digital Shuttle + → Slow step 1 → Slow step 2 → Slow step 3 → Play → Cue 1 → Cue 2

✔

- *You can't use shuttle function in front panel button without pressing STILL button first.*
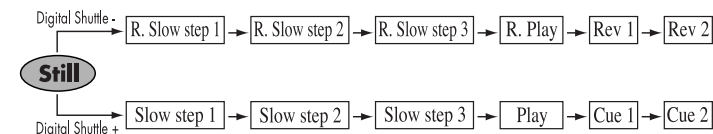
2. To use this function with set button
   - Press STILL button on front panel in playback mode. Then press REW or FF button to enter into Shuttle function.
   - Shuttle speed will change as follows :

Digital Shuttle - → R. Slow step 1 → R. Slow step 2 → R. Slow step 3 → R. Play → Rev 1 → Rev 2

Still

Digital Shuttle + → Slow step 1 → Slow step 2 → Slow step 3 → Play → Cue 1 → Cue 2

3. To return to normal playback, press the PLAY button.

4. Slow & Reverse slow speed

   Slow step 1 = 1/30 times
   Slow step 2 = 1/15 times
   Slow step 3 = 1/5 times
   Reverse slow step 1 = -1/30 times
   Reverse slow step 2 = -1/15 times
   Reverse slow step 3 = -1/5 times

- *The tape recorded in 48H mode will be reverse-playback in 3H. And the tape recorded in 18H or 30H mode will be reverse-playback in 6H.*

- *During reverse-playback in 3H and 48H, noise band may appear in the picture. And during reverse-playback in 6H, noise may appear in upper or bottom side of the picture.*
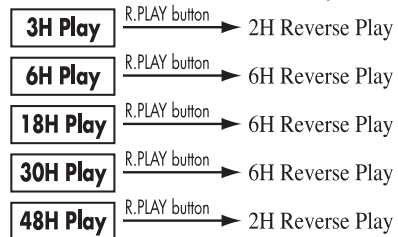
- *During picture search, noise (horizontal bars) will appear in the picture.*

- *The sound is muted.*

- *If still mode continues for 5 minutes or more, the VCR will go into stop mode to avoid damaging the tape.*

- *If the image is unstable (rolling vertically), adjust the tracking control to correct.*

Reverse Play

- Press R.PLAY button on remote control in playback mode to enter into Reverse Play mode.

3H Play	R.PLAY button →	2H Reverse Play
6H Play	R.PLAY button →	6H Reverse Play
18H Play	R.PLAY button →	6H Reverse Play
30H Play	R.PLAY button →	6H Reverse Play
48H Play	R.PLAY button →	2H Reverse Play

- To return to normal playback, press the PLAY button.

Picture Search

1   Press the FF/CUE (or REW/REVIEW) button, during normal playback.

- *The image can be seen while the tape is advanced (or rewound) at high speed.*

2   To return to normal playback, press the PLAY button.

Still Image

1   Press the PAUSE/STILL button, during normal playback.

- *A still image can be viewed.*

2   To return to normal playback, press the PLAY button.

- *With each press of the PAUSE/STILL button, the still image is advanced one image (frame).*

Vertical Lock Control

During still image mode,

1   Press the TRACKING + button to reduce the vertical rolling of the image.

2   If it cannot be corrected, press the TRACKING - button.

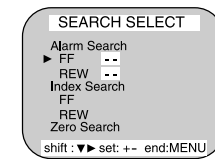- *During recording check operations, recording is suspended momentarily.*

Recording Check

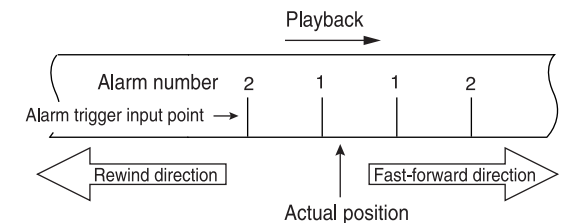During recording, press the REC CHECK button.

- *The tape will be rewound for about 5 seconds and slow play mode will be performed. The VCR will then return to the previous recording mode.*

Alarm Search

1   Press the Menu button to display the initial menu.

2   Press the SHIFT ▼ button to select Search Select, then press the SHIFT ► button to display the SEARCH SELECT menu.

```
        SEARCH SELECT
      Alarm Search
    ►   FF      --
        REW     --
      Index Search
        FF
        REW
      Zero Search

    shift : ▼► set: +–  end:MENU
```

3   Move the arrow mark (►) to FF or REW in the Alarm Search mode as you want to search.

4   Press the SET -(or +) button to enter the number of alarm marks you want to search, press the SHIFT ► button to search forward or in reverse.

- *The display returns to the normal screen.*

- *The VCR will locate the desired alarm recording and begin playback.*

Playback

Alarm number   2   1   1   2

Alarm trigger input point →

Rewind direction   Fast-forward direction

Actual position

Alarm Scan

1   Repeat steps 1 to 3.

2   Press the SHIFT ▶ button to search forward or in reverse without entering a specific alarm number.

- *The display returns to the normal screen.*
- *The VCR will advance (or rewind) the tape at high speed, and playback the first 5 seconds of every alarm recording.*
- *To cancel the alarm scan mode, press the STOP button.*

3   While the desired recording is being played back, press the PLAY button.

- *Playback will start, and alarm scan is cancelled.*

Index Search

1   Repeat steps 1 to 2.

2   Move the arrow mark (▶) to the FF or REW in the Index Search mode as you want to search.

3   Press the SHIFT ▶ button to search forward or in reverse.

- *The display returns to the normal screen.*
- *The VCR will advance (or rewind) the tape at high speed and playback the first 5 seconds of every normal recording.*
- *To cancel the index search mode, press the STOP button.*

4   While the desired recording is being played back, press the PLAY button.

- *Playback will start, and index search is cancelled.*

✔

- *In the index search mode, SHIFT ▶ button should be used to search forward or in reverse (Index FF / REW).*
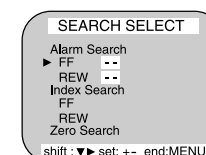
Other Functions

✔

- *When you insert a cassette, the counter always resets to zero.*
- *There is no tape counter indication for the blank portions of tape.*
- *In the 3-hour recording speed mode only, the tape counter indicates real hours, minutes and seconds.*
- *In the other SP recording speed modes (48H), the tape counter indication is a ratio of the 3-hour mode base indication.(In 48-hour recording mode, each "second" of the tape counter actually represents approximately 48/3 = 16 real seconds.)*
- *In the other LP recording speed modes (18H), the tape counter indication is a ratio of the 6-hour mode base indication. (In 18-hour recording mode, each "second" of the tape counter actually represents approximately 18/6 = 3 real seconds.)*
- *In the other LP recording speed modes (30H), the tape counter indication is a ratio of the 6-hour mode base indication. (In 30-hour recording mode, each "second" of the tape counter actually represents approximately 30/6 = 5 real seconds.)*
- *There may be a slight discrepancy between the position shown on the tape counter and the actual tape position.*
- *When rewinding the tape past the "0H 00M 00S" position("0H 00M" on the display panel), a minus(-) displayed.*

Tape Counter (Zero Search)

Using the counter, it is easy to find a desired recording.

1   Press the CLEAR button, at the beginning of the desired recording.

- *The counter will be reset to "0H 00M 00S" (on screen).*
- *The counter will be reset to "0H 00M"(on the display panel).*

2   After recording or playback, press the Menu button to display the initial MENU.

3   Press the SHIFT ▼ button to move the arrow mark (▶) to Search Select.

4   Press the SHIFT ▶ button to display the SEARCH SELECT menu. The SEARCH SELECT menu is displayed.


```
      SEARCH SELECT
    Alarm Search
  ▶  FF       --
     REW      --
    Index Search
     FF
     REW
    Zero Search
   shift : ▼▶ set: +−  end:MENU
```

5   Press the SHIFT ▼ button to move the arrow mark (▶) to Zero Search.

6   Press the SHIFT ▶ button to search the counter "0H 00M 00S"("0H 00M" on the display panel).

- *The display returns to the normal screen.*
- *The tape is rewound or advanced to the counter "0H 00M 00S" reading("0H 00M" on the display panel).*

✔

• *While the security lock is engaged, all commands are disabled.*

• *The security lock should not be engaged while a menu is displayed.*

Setting the Security Lock (Set Lock)

The security lock function is designed to prevent accidental stopping of recording if the STOP button is pressed inadvertently.

1   Set the SET LOCK switch to "ON" position.

   • *" ⊶ " is displayed on the display panel.*

2   To cancel the security lock, set the SET LOCK switch to "OFF" position.

   • *" ⊶ " will be erased from the display panel.*

Setting the HIGH PICTURE

With this function, you can view the screen in high-picture quality.

1   Set the HIGH-PICTURE switch to "ON" position.

   • *" H.P" is displayed on the display panel.*

2   To cancel the HIGH-PICTURE function, set the HIGH-PICTURE switch to "OFF" position.

   • *" H.P" is disappeared from the display panel.*

Setting the SW Out Terminal Output

Synchronization pulses for multiplexer can be obtained from the SW OUT terminal.

1   Press the MENU button, to display the initial MENU.

2   Press the SHIFT ▼ button to move the arrow mark (▶) to SW OUT Terminal Set.

3   Press the SHIFT ▶ button to display the SW OUT TERMINAL SET menu.
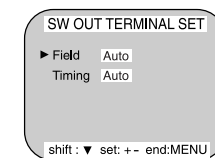
✔

• *If "TIMING" is set to FRAME (see step 6), "FRAME" will be indicated instead of "FIELD".*

• *In case of TimeLapse mode, refer to the "Recording Speed" Table of page 14.*

```
┌─────────────────────────┐
│   SW OUT TERMINAL SET    │
│                          │
│  ▶ Field      Auto       │
│    Timing     Auto       │
│                          │
│                          │
│  shift : ▼  set: + –  end:MENU │
└─────────────────────────┘
```

4   Press the SHIFT ▶ button to set "FIELD" (or "FRAME").

   • *With each press of the SHIFT ▶ button, the setting will change as indicated below.*

5   Press the SHIFT ▼ button, to select Timing.

6   Press the SHIFT ▶ button to set the "TIMING".

   • *AUTO . . . When you connect with external equipment, the field will be switched automatically.*

   • *FIELD . . . 1 pulse is output after each set number of fields. (VHS mode, 3H, 6H)*

   • *FRAME . . 1 pulse is output after each set number frames. (VHS mode, 3H, 6H)*

7   Press the MENU button, the normal screen is displayed.
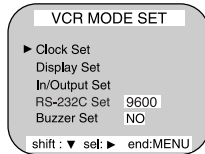
   • *The setting procedure is now complete.*

- *For RS-232C connection with computer and its operation, refer to the additional RS-232C serial communication manual.*

RS-232C Setting

You can control this set in remote by communication with Computer.
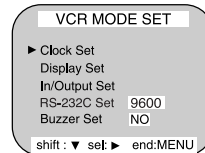
- Communication speed : 19200bps → 9600bps → 4800bps

```
        VCR MODE SET
  ► Clock Set
    Display Set
    In/Output Set
    RS-232C Set    9600
    Buzzer Set     NO

  shift : ▼  sel: ►  end:MENU
```

In the following cases, the buzzer will be heard approximately 5 times.

- *If the REC button is pressed while a cassette without erasure-prevention tab is loaded.*

- *If a cassette, without the erasure - prevention tab, is loaded while the timer is set.*

- *If there is a series recording input while a cassette without erasure-prevention tab is loaded.*

- *If the TIMER button is pressed without inserting a cassette.*

- *If "NO" is set, the buzzer will not operate.*

Setting the Buzzer

1 Press the MENU button to display the initial MENU.

2 Press the SHIFT ► button to select VCR Mode Set. The VCR MODE SET menu is displayed.

```
        VCR MODE SET
  ► Clock Set
    Display Set
    In/Output Set
    RS-232C Set    9600
    Buzzer Set     NO

  shift : ▼  sel: ►  end:MENU
```

3 Press the SHIFT ▼ button to move the arrow mark (►) to Buzzer Set.

4 Press the SHIFT ► button to set "YES" for the functions described below.
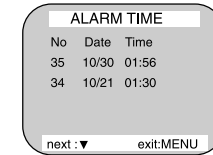
- *The buzzer will be heard whenever a button is pressed.*

- *The data for the previous alarm recordings, past 35, is erased.*
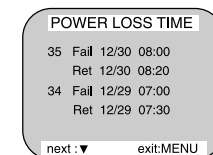
Checking the Alarm Recording Times

1 Press the MENU button to display the initial MENU.

2 Press the SHIFT ▼ button to move the arrow mark (►) to Alarm Time.

3 Press the SHIFT ► button to display the ALARM TIME menu.

- *The number of alarm triggers and the 35 most recent alarm recording times are displayed.*

```
        ALARM TIME
   No    Date   Time
   35   10/30   01:56
   34   10/21   01:30


   next :▼         exit:MENU
```

4 Press the MENU button twice, the normal screen is displayed.

- *POWER LOSS ....*

  the number of power losses and the date and time of the 35 most recent power losses and recoveries are displayed.

Checking Power Loss Times

1 Press the MENU button to display the initial MENU.

2 Press the SHIFT ▼ button to move the arrow mark (►) to Power Loss Time.

3 Press the SHIFT ► button to display the POWER LOSS TIME menu.

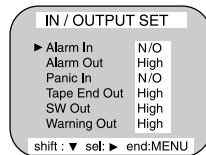- *The number of power losses, and the 35 most recent power loss times are displayed.*

```
       POWER LOSS TIME
   35  Fail 12/30  08:00
       Ret  12/30  08:20
   34  Fail 12/29  07:00
       Ret  12/29  07:30

   next :▼         exit:MENU
```

4 Press the MENU button twice, the normal screen is displayed.

Setting In/Out terminals

1 Press the MENU button to display the initial MENU.

2 Press the SHIFT ▶ button to display the VCR MODE SET menu.

3 Press the SHIFT ▼ button to move the arrow mark (▶) to In/Output Set.

4 Press the SHIFT ▶ button to display the IN/OUTPUT SET menu.

5 Press the SHIFT ▼ button to move the arrow mark (▶) for the desired item.

6 Press the SHIFT ▶ button to set "N/C" or "N/O", "High" or "Low".

```
        IN / OUTPUT SET
  ▶ Alarm In          N/O
    Alarm Out         High
    Panic In          N/O
    Tape End Out      High
    SW Out            High
    Warning Out       High

    shift : ▼  sel: ▶  end:MENU
```

7 Press the MENU button three times, the normal screen is displayed.

• ALARM INPUT Terminal

This terminal is to connect PIR sensors, door contacts or any type of motion detector.

1) "N/C" (Normally CLOSED Switch Circuit)

    If the input becomes DC 5V for 500 msec or more, the VCR starts alarm recording.

2) "N/O" (Normally OPEN Switch Circuit)

    If the input becomes 0V for 500 msec or more, the VCR starts alarm recording.
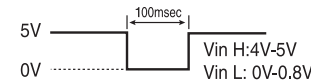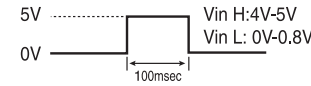
• ALARM OUTPUT Terminal

This terminal is to connect to any external source, such as a siren, etc.

1) "High"

    When an alarm input is received and the unit is recording, the output becomes DC 5V. Once the alarm recording is over, the output returns to 0V.

2) "Low"

    When an alarm input is received and the unit is recording, the output becomes 0V. Once the alarm recording is over, the output returns to DC 5V.

• PANIC INPUT Terminal

1) "N/C" (Normally CLOSED Switch Circuit)

    If the input becomes DC 5V for 500 msec or more, the VCR starts panic recording.

2) "N/O" (Normally OPEN Switch Circuit)

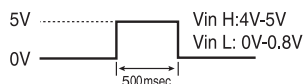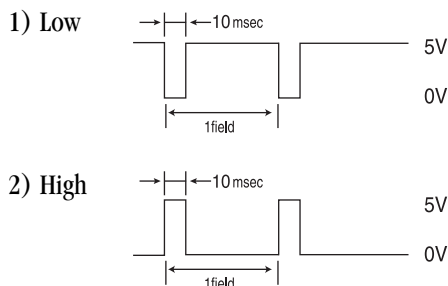   If the input becomes 0V for 500 msec or more, the VCR starts panic recording.
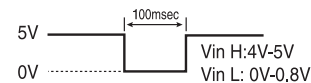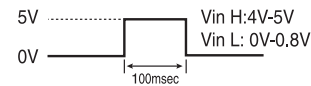
• TAPE END(OUT) Terminal

1) "High"

    During recording, when the end of the tape is reached, the output becomes DC 5V.

2) "Low"

   During recording, when the end of the tape is reached, the output becomes DC 0V.

• SW OUTPUT Terminal

While recording, a pulse signal(DC 5V) is output at the SW OUT terminal after each recording period. This terminal is usually connected to the switch input of devices like a camera switching unit, or a quad compressor.

1) Low

2) High

• SERIES OUTPUT Terminal

During recording, when the end of the tape is reached, the output becomes DC 5V .
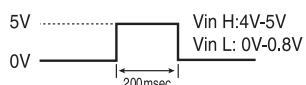
• SERIES INPUT Terminal

If the input becomes DC 5V for 200 msec or more, the VCR starts series recording.

• WARNING OUTPUT Terminal

1) "High"

If the error display on the display panel continues to flash, the output becomes DC 5V. If the POWER button is pressed, the emergency mode is released, then the output becomes 0V.
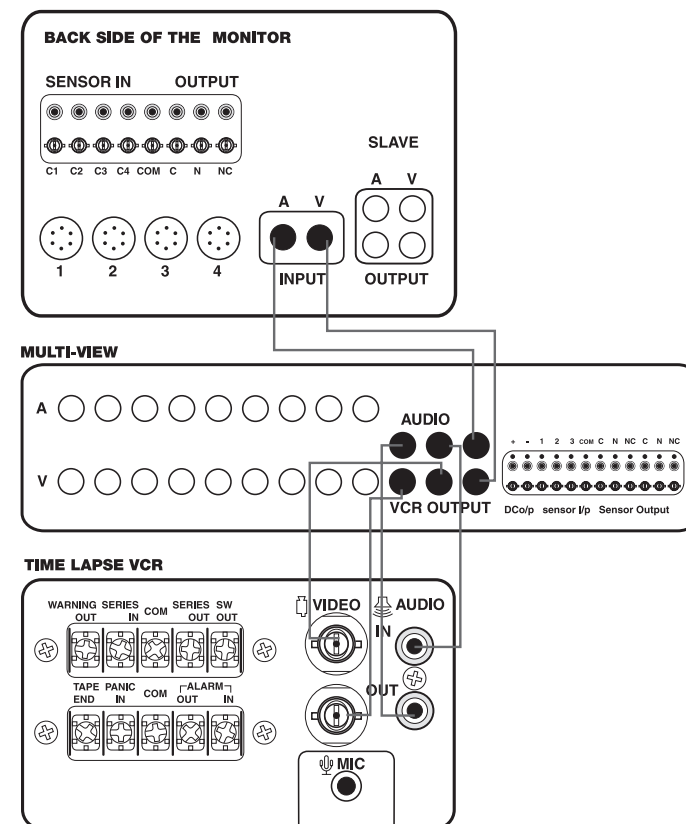
2) "Low"

If the error display on the display panel continues to flash, the output becomes 0V. If the POWER button is pressed, the emergency mode is released, then the output becomes DC 5V.
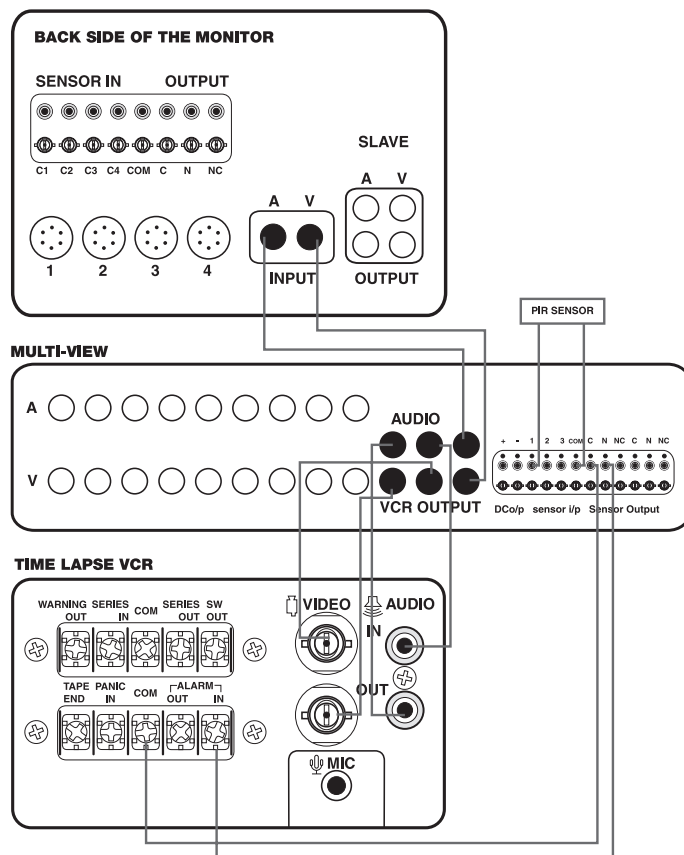
If you are also using a Multi View system, use the following diagrams as a guide to connecting the VCR for normal or alarm recording.

Connecting to a Multiview System for Normal Recording

Connecting to a Multiview System for Alarm Recording

BACK SIDE OF THE MONITOR

SENSOR IN   OUTPUT

C1 C2 C3 C4 COM C   N   NC

SLAVE

A   V

1   2   3   4

A   V

INPUT   OUTPUT

PIR SENSOR

MULTI-VIEW

A

V

AUDIO

+ - 1 2 3 COM C N NC C N NC

VCR OUTPUT   DCo/p   sensor i/p   Sensor Output

TIME LAPSE VCR

WARNING SERIES COM SERIES SW
OUT   IN   OUT   OUT

TAPE PANIC COM ALARM
END   IN   OUT IN

VIDEO   AUDIO
         IN

OUT

MIC

Daily Inspection

The following daily inspections are recommended in order to assure long-term and trouble-free operation of the unit.

The daily inspections are particularly important if using autorepeat recording.

Inspection Procedure

✔

- If the security lock is engaged, it has to be released before proceeding with the inspection.

- If any problem is discovered during the inspection, unplug the power cord and consult your dealer.

1 Turn on the power to the camera, TV monitor and other connected devices.

2 Check that the image received on the TV monitor is correct.

3 Check that the on-screen display of the date and time is correct.

4 Press the REW button to rewind the recorded tape a few seconds.

5 Press the PLAY button and check that the playback image is correct.

- *Check in particular playback of time lapse recording (18 or 30 hour mode).*

6 Check that the recorded date and time are correct.

Troubleshooting Guide

If the unit does not operate normally when you follow the instructions indicated in the manual, please refer to the table below.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No power.	The power cord is not correctly connected to the wall outlet. The unit is in timer recording stand-by mode.	- Connect the power cord firmly into the wall outlet. - This is normal, not a malfunction.
No image displayed on the monitor TV.	The connections are not correct. The power to the camera and/or monitor TV is not turned on.	- Check that all connections are correct. - Turn all connected devices power on.
The buttons do not respond.	The unit is in timer recording stand-by mode. Alarm recording. Panic recording. The security lock(SET LOCK) is engaged.	- Press the POWER(STANDBY/ON) button. - Wait for the alarm recording to end. - Press the STOP button for 3 seconds to stop. - Wait for the panic recording to end. - Press the STOP button for 3 seconds to stop. - Cancel the security lock.
Unit will not go into record mode.	The loaded cassette has no erasure prevention tab.	- Load a cassette tape with erasure prevention tab or cover the tab hole with adhesive tape.
Autorepeat.	"NO" is selected for autorepeat recording in the REC MODE SET menu. During autorepeat recording when there is an alarm input, autorepeat recording is canceled.	- Be sure to select "YES" for autorepeat recording. - Set "YES" again for autorepeat recording.

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
Timer recording.	The date and time are not correct. The unit is not set to timer recording stand-by mode. "N" is selected for the TIMER PROGRAM SET.	- Set the date and time correctly. - Press the POWER(STANDBY/ON) button to display "▭" on the display panel. - Be sure to select "Y" for the TIMER PROGRAM SET.
Alarm recording.	"NO" is selected for alarm recording in the ALARM REC SET menu.	- Be sure to select "YES" for alarm recording.
Noise in the playback picture.	The tracking adjustment is in the wrong. The video heads need cleaning.	- Adjust it by using the manual tracking. - Clean the video heads.
The date and time are not recorded.	"NO" is selected for the date and time in the DISPLAY SET menu. The date and time go off the ON-SCREEN by pressing the DISPLAY button.	- Be sure to select "YES" for the display. - Press the DISPLAY button to show the date and time.
The cassette tape cannot be ejected	Problem with the system or tape.	- Unplug the power cord then plug it back in.

Periodic Inspection and Maintenance

Periodic inspection and maintenance should be referred to your dealer. If there is noise in the playback picture, and it cannot be corrected using the tracking control, it may indicate that the video heads need cleaning. The video heads should be cleaned and inspected every 1,000 hours. The video heads usage can be checked using initial menu, running time.

System Down

✔

• Press the RESET button for more than 0.5 seconds to perform the reset. Running Time will not be reset.

If the unit does not function at all, try the following.

1 Unplug the power cord then plug it back in.

2 Reset the memory. (Press the RESET button. Under normal conditions, do not touch the RESET button.)

3 If the problem is not corrected after performing steps 1 and 2, consult your dealer.

Specifications

General Specifications

Recording method	Dual-azimuth 4-head rotating helical scanning system
Audio recording	In 3, 6, 18 and 30 hour modes
Tape speed	33.35 m/sec (3 hour mode)
Specified video cassette tape	VHS 1/2 inch video cassette tape
Recording/playback time	3, 6, 18, 30, 48, 72, 168, 240, 480, 720, 960 hours (when using E-180 tape)
Fast forward/rewind time	Within 3 minutes (when using E-180 tape)
Television system	PAL color TV system

Video

Recording method	Luminance signal : FM recording ~0.8V Down-converted subcarrier phase shift system
Video input	1 Vp-p, BNC, 75Ω, unbalanced
Video output	1 Vp-p, BNC, 75Ω, unbalanced
Horizontal resolution	Black & white mode 300 lines
	Color mode 250 lines

Audio

Input	RCA pin jack more than 47kΩ -8.8dBm, unbalanced
Output	RCA pin jack less than 1.5kΩ -7.8dBm, unbalanced
Microphone input	-60 dBs, 3.5mm mini jack, 10kΩ, unbalanced

Connectors

Alarm input	DC 4~5V(Open), DC 0~0.8V(Closed)/5.7kΩ
Alarm output	DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ
Panic input	DC 4~5V(Open), DC 0~0.8V(Closed)/5.7kΩ
End output	DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ
Warning output	DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ
Series input	DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ
Series output	DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ
Switch output	DC 4~5V(H), DC 0~0.8V(L)/5.7kΩ
Common	0V(GND)

Other Specifications

Operating temperature range	41ºF - 104ºF
Operating humidity range	80% or less
Power requirements	AC 90-250V , 50/60 Hz
Power consumption	12W
Dimensions	360(W) x 90(H) x 289(D)
Weight	approximately 4kg

NOTE : The specifications and external appearance of this unit are subject to change without notice.