

4-Channel Network Digital Video Recorder

User's Manual



Thank you for using TT DVR. Please read this manual carefully prior to your first operation.

Caution!

The product design and description are subject to change or update without prior notice.

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Notice!

This User's Manual describes all functions of the full-set model. For non full-set model product, only part of the functions is included.

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Chapter 1 Product description

Overview

The Four-channel embedded digital hard disk video recorder is a device specially designed for the safety field. It utilizes the embedded processor and embedded operating system, and combines the latest IT technologies, such as video/audio compression/decompression, high capacity hard disk storage, TCP/IP network remote control etc. All of these make sure the system's high intelligence and reliability.

This device supports different networks like Ethernet and Internet, to realize remote video/audio synchronization. It is easy-to-use and applicable to different fields as the safety measures, including bank, telecommunication, school, hospital, supermarket, residential area, factory, company, warehouse, restaurant, hotel, park, museum, water facilities and casino etc.

Functions and features

- MPEG4 compression format with the optimal image quality and code flow ratio; Standard configuration (40G hard disk) for continuous record for 45 hours (standard image quality)
- Recording resolution: PAL 352*288 (CIF); NTSC 352*240; Recording resource: PAL 100 frames/NTSC 120 frames
- Key functions includes:
 - 1) Four-channel video preview, stereo on-site monitoring
 - 2) Four-channel video record, stereo record
 - 3) Four-channel stereo play
 - 4) Search and replay by time and file
 - 5) USB backup

- USB 2.0 backup interface
- Support flash disk software update
- Support Chinese OSD, Chinese/English version switch
- Hi-speed ball control
- Menu and search controlled with shuttle, whose maneuverability is better than mouse
- Support high capacity hard disk up to 1000G
- Specially designed video file system, which can extend the hard disk's service life by over 10 times
- Absolutely independent from PC platform, thoroughly removed shutdown status due to improper computer operation, complex management and operation, as well as virus infection, with higher reliability
- Operating system: Linux, compressed chip: ASIC

Chapter 2 Installation instructions

Safety caution

- In order to ensure yours interests, please read this User's Manual carefully prior to your first installation and operation.
- This product is indoor design. To prevent short circuit or electric shock, don't place it in rain or damp environment.
- In case of any solid or liquid access into the product, turn off its power supply immediately. Restart it until the qualified technician makes full inspection.
- This product is precision device. There is nearly no part inside the product, which you can fix by yourself. In case of failure, please have the qualified technician fix it, or contact your dealer.

Packing list

Packing List

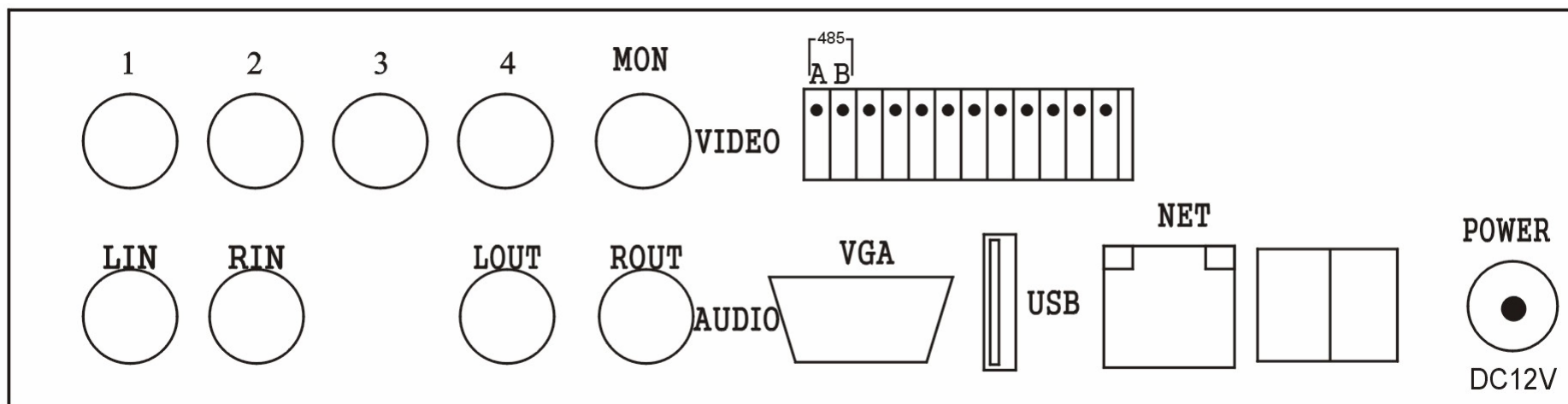
Item	Quantity
4-Chl Network Digital Video Recorder	1
Remote controller	1 (Optional)
Batteries for remote controller	2 (Optional)
'Power cord	1
User's manual	1
Warranty card	1

Installation environment

- This video recorder is powered by DC 12V, and above 4A electric source . Please check your electric source's voltage before installation and operation.
- In case that this video recorder is out of service for a long time, you'd better power it off and pull out its plug from the jack.
- Please select a proper installation location so that the air can freely go around this device to prevent it from overheating.
- This device shall not installed around the heat source like radiator and ventilation channel, or the location with direct sunshine or too much dust, or the location with mechanical vibration or impact.

Backboard connection

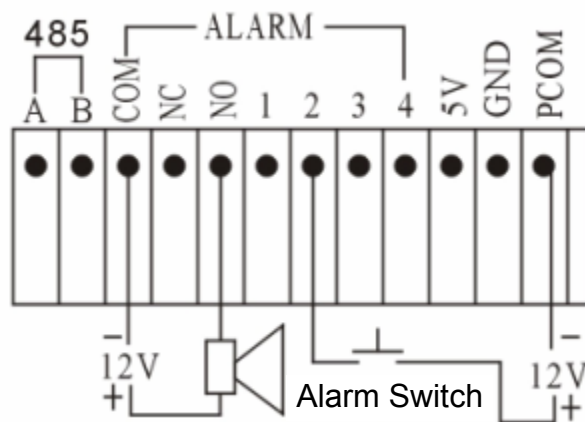
1) Backboard diagram



- “1-4” are video input interfaces connected to the video recording gun.

- “MON” is video output interface connected to the monitor.
- “LIN” and “RIN” are audio input interfaces, supporting LINE IN audio input signal.
- “LOUT” and “ROUT” are audio output interfaces and can be connected to earphone or active speaker.
- “VGA” is video output and can be connected to the computer display.
- “USB” interface can accommodate flash disk for software update or backup.
- “NET” can be connected to the network.
- ”□□” is the switch for power supply.
- “DC 12V” is alternating current power input.

2) Control interface



- (1) “485” interface makes hi-speed PTZ control signal output. “A” interface is different from “B” interface. In the connection operation, make sure they are matched correspondingly.
- (2) “NC”, “NO”, “COM” are alarm relay output (NC=Normal Closed, NO=Normal Open, COM=Public Terminal)
- (3) “1-4” are alarm input, with photo coupler isolation inside.
- (4) The above figure also gives a typical alarm input/output connection. The input/output needs an external DC12V electric source for powering the photo coupler and speaker.

USB device

After the flash disk is inserted, the “USB” lamp on the panel becomes lit. It means that the system identify this flash disk. You can make backup or update operation.

After the flash disk is pulled out, the “USB” lamp on the panel goes out.

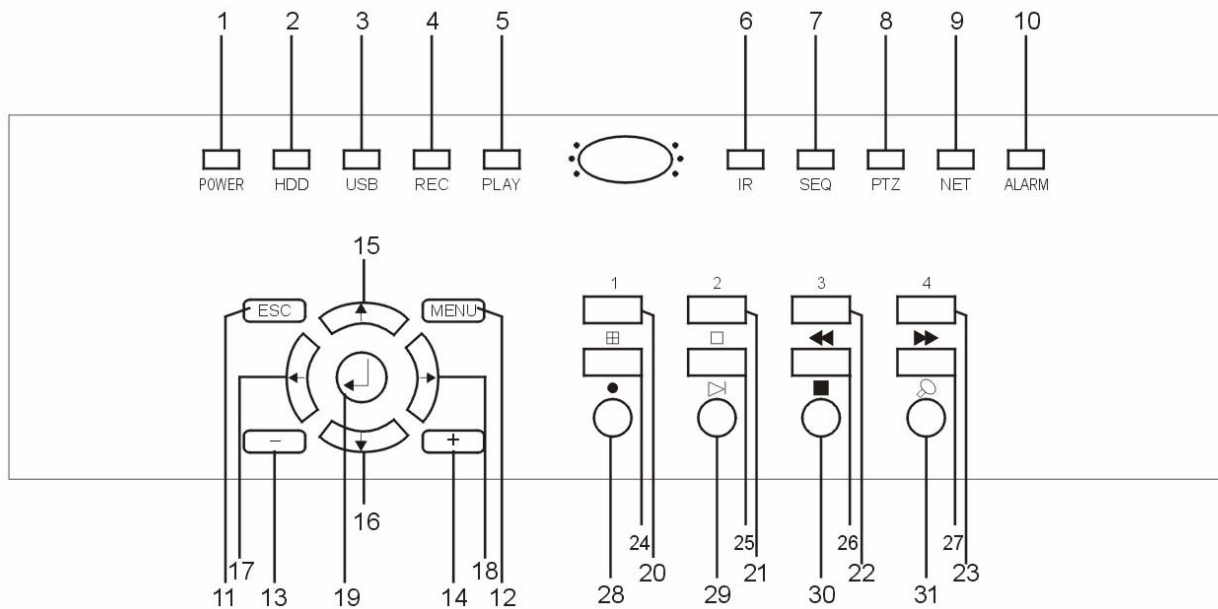
Audio connection

This device supports stereo input (LINE IN) and stereo output.

Chapter 3 Operating instructions

Front panel operation

Front panel diagram



Status lamp

- | | |
|---------------------------------|----------------------------------|
| 1. Power/sleep | 2. Hard disk read/write status |
| 3. Flash disk access indication | 4. Recording status |
| 5. Replay status | 6. Remote controller ID selected |
| 7. Automatic programming status | 8. PTZ control status |
| 9. Network connection status | 10. Alarm output indication |

Function key description

1. Exit from menu "ESC" 11

Press "ESC" key to exit from the lower menu to the upper menu, till completely exit from the menu status, including the information menu.

2. Menu setup "MENU" 12

In the on-site status, press "MENU" key to go to the menu setup status.

3. Value down "-" 13

Press "-" key to decrease the selected value or modify it.

4. Value up "+" 14

Press "+" key to increase the selected value or modify it.

5. Rotate upwards "↑" 15

In the menu status, press "↑" key to select the upper option. In PTZ control status, press "↑" key to control the dome to rotate upwards.

6. Rotate downwards "↓" 16

In the menu status, press "↓" key to select the lower option. In PTZ control status, press "↓" key to control the dome to rotate downwards.

7. Rotate leftwards "←" 17

In the menu status, press "←" key to select the left option. In PTZ control status, press "←" key to control the dome to rotate leftwards.

8. Rotate rightwards "→" 18

In the menu status, press "→" key to select the upper option. In PTZ control status, press "→" key to control the dome to rotate rightwards.

9. Enter key "↵" 19

Press "↵" key to make conformation on your desired function.

10. Single-channel on-site preview “1” 20

This button allows switching the on-site preview and monitoring channels. In QUAD replay status, press “1” key to zoom in channel 1’s image. In CIF replay status, press “1” key for the first time to replay channel 1’s image. Press it again to zoom in the image. When you press it the third time, it returns to the normal replay status.

11. “2” 21

It is the same as the above button.

12. “3” 22

It is the same as the above button.

13. “4” 23

It is the same as the above button.

14. Four divided image “田”24

When you press “田” key, the monitor displays four divided image.

15. Channel 1 large image “□”252

In the on-site status, when you press “□” key, the monitor displays channel 1 large image.

16. Rewind “⏮” 26

In the replay status, when you press “⏮” key, the device replays the image at 2x speed. When you press it again, it replays the image at 4x speed. If you press it again, the device returns to the normal play status.

17. Fast forward “⏭” 27

In the replay status, when you press “⏭” key, the device plays the image forward at 2x speed. When you press it again, it plays the image at 4x speed. If you press it again, the device returns to the normal play status.

18. Record button “●” 28

In the on-site status, when you press “●” key, the device goes into the recording status. The record parameters are set by the system menu. In the recording status, press “■” key to stop the record operation.

19. Replay and pause “▷” 29

In the on-site status, when you press “▷” key, the device goes into the replay status and directly plays the last file. When you press it again, the play operation stops. When you press it again, the replay operation continues.

20. Stop “■” 30

In the backup status, press “■” key to stop the backup operation.

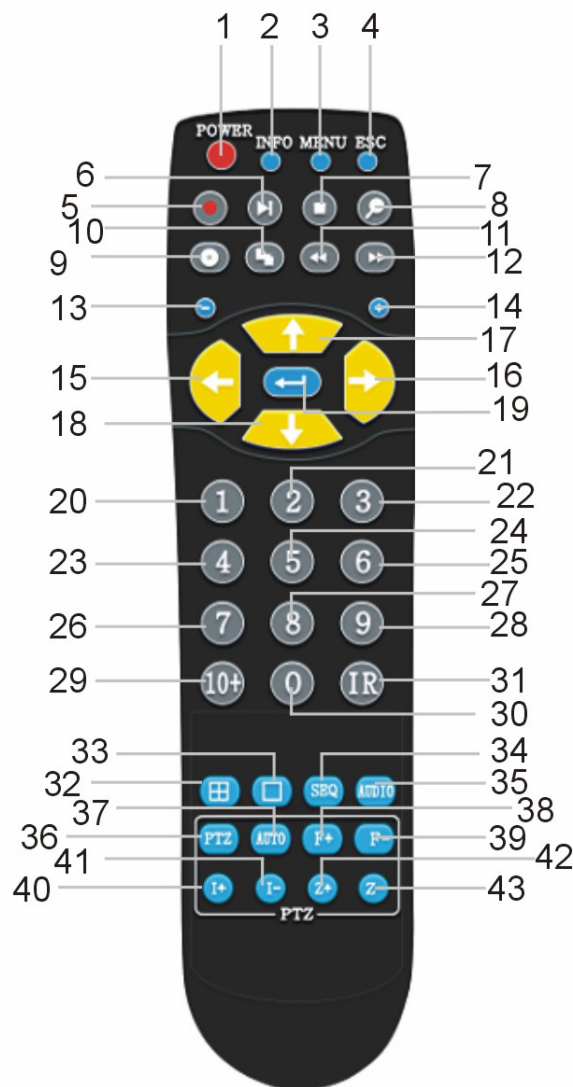
In the recording status, press “■” key to stop the recording operation.

In the replay status, press “■” key to stop replay operation and returns to the on-site preview status.

21. Search “🔍” 31

In the on-site or replay status, when you press “🔍” key, the system displays a search menu. There are two search modes (by time and by file). You can select the option to make search operation in different modes. Press “ESC” key to exit to the upper menu, till exit from the search menu.

Remote controller operation



1. Power button "POWER" 1
In the normal running status, when you press "POWER" button, a prompt menu appears, asking whether you are sure to shut the system down. After you press OK, this device automatically shut down and goes into sleep status. The power lamp on the panel becomes green from the original red status.
2. Hard disk information "INFO" 2
In the on-site status, when you press "INFO" key, the hard disk information appears and you can view the utilization of the hard disk. Press "ESC" key to exit from the information menu.
3. Menu setup "MENU" 3
In the on-site status, press "MENU" key to go to the menu setup status.
4. Exit from menu "ESC" 4
Press "ESC" key to exit from the lower menu to the upper menu, till completely exit from the menu status, including the information menu.
5. Record button "●" 5
In the on-site status, when you press "●" key, the device goes into the recording status. The record parameters are set by the system menu. In the recording status, press "■" key to stop the record operation.
6. Replay and pause "▶" 6
In the on-site status, when you press "▶" key, the device goes into the replay status and directly plays the last file. When you press it again, the play operation stops. When you press it again, the replay operation continues.
7. Stop "■" 7
In the backup status, press "■" key to stop the backup operation.

In the recording status, press “■” key to stop the recording operation.

In the replay status, press “■” key to stop replay operation and returns to the on-site preview status.

8. Search “🔍” 8

In the on-site or replay status, when you press “🔍” key, the system displays a search menu. There are two search modes (by time and by file). You can select the option to make search operation in different modes. Press “ESC” key to exit to the upper menu, till exit from the search menu.

9. Hold 9

10. Data backup “📁” 10

In the search status, after select the searched data, press “📁” key to back it up on the flash disk. For the search operation, refer to the following text. In the replay status, it can back up the current image and sound. In the backup status, press “■” key to stop the backup operation.

11. Fast rewind “⏮” 11

In the replay status, when you press “⏮” key, the device replays the image at 2x speed. When you press it again, it replays the image at 4x speed. If you press it again, the device returns to the normal play status.

12. Fast forward “⏭” 12

In the replay status, when you press “⏭” key, the device plays the image forward at 2x speed. When you press it again, it plays the image at 4x speed. If you press it again, the device returns to the normal play status.

13. Value down “-” 13

Press “-” key to decrease the selected value or modify it.

14. Value up “+” 14

Press “+” key to increase the selected value or modify it.

15. Rotate leftwards “←” 15

In the menu status, press “←” key to select the left option. In PTZ control status, press “←” key to control the dome to rotate leftwards.

16. Rotate rightwards “→” 16

In the menu status, press “→” key to select the upper option. In PTZ control status, press “→” key to control the dome to rotate rightwards.

17. Rotate upwards “↑” 17

In the menu status, press “↑” key to select the upper option. In PTZ control status, press “↑” key to control the dome to rotate upwards.

18. Rotate downwards “↓” 18

In the menu status, press “↓” key to select the lower option. In PTZ control status, press “↓” key to control the dome to rotate downwards.

19. Enter key “↵” 19

Press “↵” key to make conformation on your desired function.

20. Single-channel on-site preview “1” 20

This button allows switching the on-site preview and monitoring channels. In QUAD replay status, press “1” key to zoon in channel 1's image. In CIF replay status, press “1” key for the first time to replay channel 1's image. Press it again to zoom in the image. When you press it thrice, it returns to the normal replay status.

21. “2” 21

It is the same as the above button.

22. “3” 22

It is the same as the above button.

23. “4” 23

It is the same as the above button.

24-31. Hold 24-31

32. Four divided image “田” 32

When you press “田” key, the monitor displays four divided image.

33. Channel 1 large image “□” 33

In the on-site status, when you press “□” key, the monitor displays channel 1 large image.

34. Automatic switch “SEQ” 34

In the on-site preview status, when you press “SEQ” key, the monitor automatically switch channels 1-4's images. Press this key again to stop the programming operation.

35. On-site audio “AUDIO” 35

After you press “AUDIO” key, a red AUDIO mark appears on the top left corner of the screen, which means the audio output is opened. If you press this key again, the mark disappears, which means the audio output is closed. In the on-site status, the output is the on-site sound. In replay status, the output is the recorded sound.

36. Dome control status “PTZ” 36

In the on-site preview status, when you press “PTZ” key, PTZ characters appear on the monitor, which means the device is in PTZ control status. Press “1-4” key to change the control channels. Each channel PTZ's control parameters can be modified in the system setup menu. Press this key again to exit from PTZ control status.

37. Automatic rotation “AUTO” 37

In PTZ control status, press “AUTO” to make PTZ rotate automatically.

38. Focal length “F+” 38

In PTZ control status, press “F+” to extend the focal length.

39. Focal length “F-” 39

In PTZ control status, press “F-” to shorten the focal length.

40. Aperture “I+” 40

In PTZ control status, press “I+” to enlarge the aperture.

41. Aperture “I-” 41

In PTZ control status, press “I-” to minish the aperture.

42. Zoom in image “Z+” 42

In PTZ control status, press “Z+” to pull the distant view near and zoom in the image.

43. Zoom out image “Z-” 43

In PTZ control status, press “Z-” to zoom out the image and enlarge the visual field.

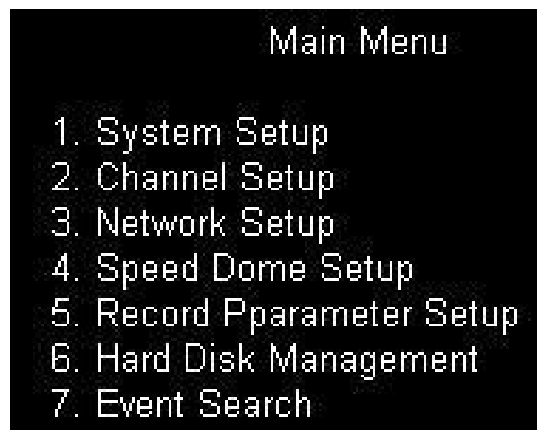
Chapter 4 Menu setup

Menu operation

In the on-site preview status, select "MENU" key on the remote controller or the front panel to go to the main menu. Select "ESC" key to return to the upper menu, till exit from all menus. Those keys like "UP", "DOWN", "LEFT", "RIGHT", "OK", "+", "-", "MENU", "ESC", shuttle's internal/external rings work in the menu operation.

Note: In the operations like changing video format, recording mode, reloading factory settings, the system will restart.

Main menu



System menu setup

System setup

Time Setup: 2008-01-04 12:00:00

Time Format: Asia (YYYY/MM/DD)

Time Display Location: Top

Video Format: PAL

Software Upgrade: OK

Factory Setup: OK

Language: English

- (1) Time setup: adjust the system date and time.
- (2) Time format: set the format of date and time (Asia/Europe/America optional)
- (3) Time location: set the location of the date and time (top/bottom/no display optional)
- (4) Separator: select the color of separator (grey/black/white optional, or close)
- (5) Video format: select the video format (PAL/NTSC optional). After the switching, the system will restart.
- (6) Software update: before the software update, the flash disk with newer software shall be inserted. In the software update process, avoid powering off or pulling the flash disk out. After the software update, the system will restart.
- (7) Factory setting: reload the factor settings. After the reloading operation, the system will restart.
- (8) Language: Chinese/English switch

Channel setup

Channel Setup**Channel: CAM1****Channel Name: CAM01****Brightness: 50****Chroma: 50****Contrast: 50****Acutance: 50****Level Excursion: 35****Plumb Excursion: 03**

(1) Channel: select the channel number of the parameter to be modified.

(2) Channel name: modify it by pressing "ok" key.

(3) Brightness

(4) Chroma

(5) Contrast

(6) Acutance

(7) Horizontal offset: adjust the central point of the image in this channel horizontally.

(8) Vertical offset: adjust the central point of the image in this channel vertically.

Network setup

Network Setup

IP Address: 192.168.001.123

Gateway: 192.168.001.001

Subnet Mask: 255.255.255.000

MAC Address: 00 00 00 00 00 00

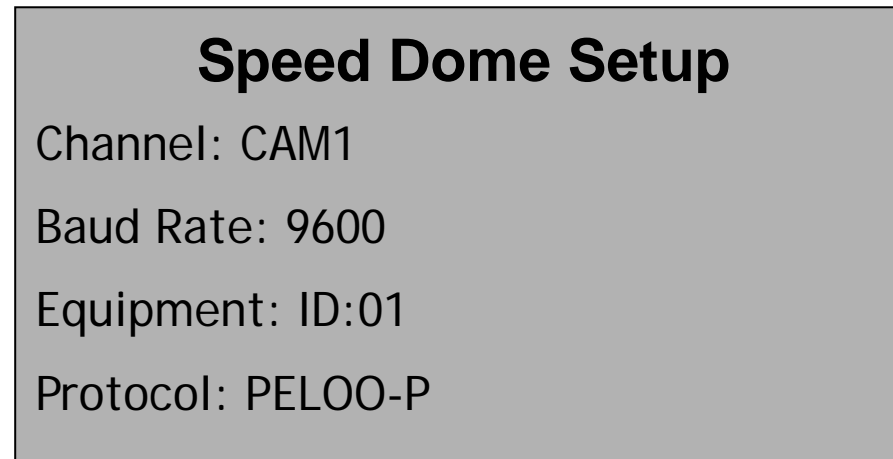
Port: 6802

Login Name: USER01

Password: 000000

- If this device is used in LAN, the client shall correspond to the IP address and port number.
- If this device is used in Internet, the forward IP and port number shall be set on the router. The domain or IP and port number shall be entered on the client.

Speed dome setup



- (1) Channel: channel to be set
- (2) Baud rate: corresponding speed dome's baud rate
- (3) Device ID: corresponding speed dome's address
- (4) Protocol: corresponding speed dome's communication protocol

Record parameter setup

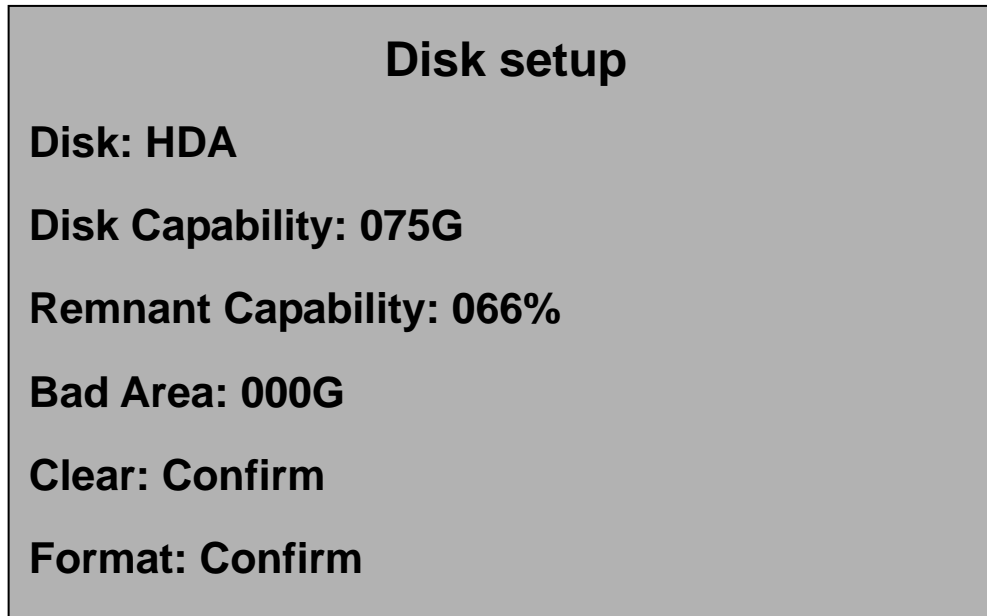
Record Setup
Record Setup: QUAD
Overlay: ON
Record Audio: ON
Other Setup: Entrance

Channel:	1	2	3	4
Image Quality:	Best	Best	Best	Best
Frame Rate:	25	25	25	25

- (1) Record mode: CIF/QUAD; after the modification, the system will restart.
- (2) Overwrite: whether allow overwriting the content in the disk. If so, after all hard disks are full, the original record information will be overwritten by new data from the first disk. If not, a prompt will appear tell you that the disk is full.
- (3) Other setup: press OK to enter this setup interface to set the image quality and frame rate.

Hard disk management

This menu allows emptying or formatting the selected hard disk.



Event search

This menu allows searching the device's start, closedown and recording information.

Event Search

Start Time: 2005/11/20

Over Time: 2005/11/20 Search

NO.	Event	Time	
01	POWER ON	20-01/11/20	00:01:10
02	POWER ON	20-01/11/20	01:01:30
03	POWER ON	20-01/11/20	01:00:30
04	POWER ON	20-01/11/20	00:30:00

Chapter 5 Basic operation

Start

Before your start, please make sure all measures described in the Installation Instructions have been put in place.

Before your start, please check whether the system is connected correctly, whether the input and output devices are connected, and whether the electric source is connected.

Please make sure that your recorder input's video format (PAL/NTSC) and monitor's format meet the requirements.

After the check, start the peripheral devices first. Connect the recorder's power cord, and turn on the power switch on the backboard.

After the recorder starts, the power lamp becomes red. If it is in the record status before the last shutdown operation, it will automatically return to the record status.

Software update

Copy the latest software into the root directory of the flash disk.

Insert the flash disk to the recorder's USB interface.

After entering the "System Setup" menu, select "Software Update" and press "↵" key. After the update operation, the recorder will restart automatically. In the update process, avoid powering off or pulling the flash disk out. Otherwise, the update operation will fail.

The entire update process doesn't exceed 10 seconds.

Make sure the flash disk is in good status to avoid any update failure.

In case of update failure, a fireusb folder will appear in the flash disk. Copy all files in the update folder into the fireusb folder. Insert the flash disk and re-power on. Your DVR will start from the flash disk. After start, the update operation will continue.

Hard disk Installation

Release the screw from the cover of the machine, open the cover backward, and connect the power supply line of the hard disk with data line correspondingly (please find the direction of the socket), then put the hard disk onto the 4 screw holes at the bottom of the cover, and finally lock the screws.

PTZ control

In the on-site or record mode, press “PTZ” key on the panel or remote controller to go to PTZ control interface.



Press “1”-“4” key to select the current control channel.

Preparation

After power on, the system starts. If the system fails to find the hard disk, a prompt “No Disk” will appear on the top right corner of the screen.



Before the recording operation, turn on the power of all relevant devices. Make sure all video image input is ready. Test the audio input by on-site monitoring. Press “INFO” key to view the overwrite method and available capacity. If there is not much capacity, please

consider whether replace a hard disk, or make backup, or select the overwrite mode.

Disk information

Disk: Ver. 1.001

Disk: HDA

Disk capability: 075G

Remnant Capability: 100%

Coverage: 000%

Bad Area: 000G

Pioneer Record Time: 2005/01/01 00:00:00

Latest Record Time: 2005/01/01 00:00:00

Network Information

DVR IP: 192.168.1.123

PORT: 6802

CLINET IP: 60.80.70.40

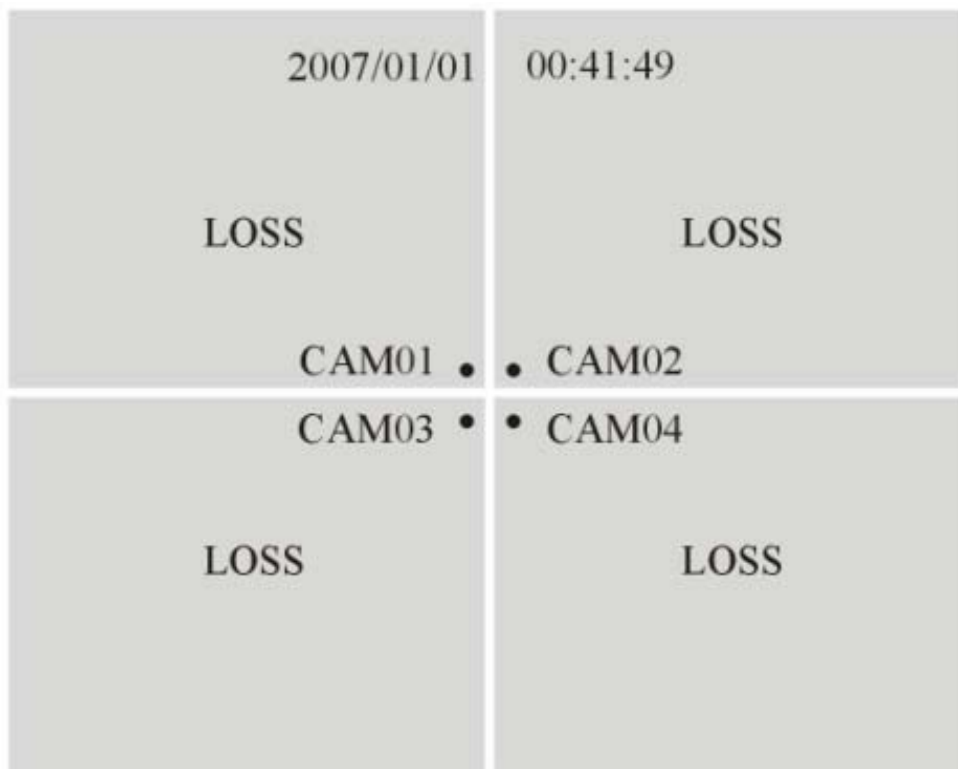
In necessary, you can go to the menu setup interface to set the record parameters like overwrite rate, audio record, record image quality, and frame rate.

Recording operation

In the on-site preview status, when you press “●” key, red dots appear on four channels, which means record starts.

If the record is in normal status, “HDD” lamp on the panel flashes or becomes lit.

After the hard disk is full, if the overwrite operation is allowed, the original content will be overwritten and the recording operation continues. Otherwise, a prompt “Disk Full” appears on the top right corner and the recording operation stops. In the recording process, press “■” key to stop the recording operation.



Search Menu
Time Search
Record Search

Replay and backup

- In the on-site mode, press “▶” key to play the last record file.
- In the on-site mode, press “🔍” key to display the search menu.
- There two search and replay methods (time search and record search). In the search and replay menu, it supports both play function and and backup function.
- If time search is selectd, press “↵” key to show the time play menu. In the time play menu, the first two lines indicate the record's start and stop time. In the start time option, enter the desire play time. Move the cursor to “Play” key, and then press “↵” key.

The device will play the record file at this time. If you want to back up the record file, insert the flash disk. Enter your desire start and stop time as well as the backup channel in this menu. Move the cursor to “Backup” key, and then press “↵” key. In the backup process, the system will prompt that it is backing up. If you want to terminate the backup operation in advance, press “■” key. The system will display WAITING. After the sign disappears, it means the backup operation finishes. Afterwards, you can pull your flash disk out.

Play Time

Pioneer Record Time: 2005/01/01 00:00:00

Latest Record Time: 2005/01/01 00:50:30

Begin Time: 2005/01 00:10

(Backup) Over Time: 200/01/01 01:30

Channel: CAM1

Backup Play

Video Search

Begin Video Start Time: 2005/11/20 00:00:00

Latest Video Over Time: 2005/11/20 00:50:30

Catalog: 2005/01/01 Search

NO.	Time	Size
01	00:13:42	3M
02	00:31:02	8M
03	00:40:45	3M
04	00:55:00	5M
05	--:--:--	

01/01

PLAY/ENTER Backup

- If record search is selected, press “↵” key to show the record search menu. In the record search menu, the first two lines indicate the record's start and stop time. In the time option, enter the desired search time. Move the cursor to “Record” key, and then press “↵” key. The device will play the record file at this time. If you want to back up the record file, insert the flash disk. Press “BAK” key to start the backup operation. In the backup process, the system will prompt that it is backing up. If you want to terminate the backup operation in advance, press “■” key. The system will display WAITING. After the sign disappears, it means the backup operation finishes. Afterwards, you can pull your flash disk out.
- In the replay process, press “Backup” key to make synchronous backup.
In the replay process, fast forward and fast rewind operations are available, and single frame replay after pause.
In the on-site preview status, press “PLAY” key to play the latest file.
In the backup process, press “Stop” key to stop backup.
In the replay process, press “stop” key to stop replay and return to the on-site preview status.

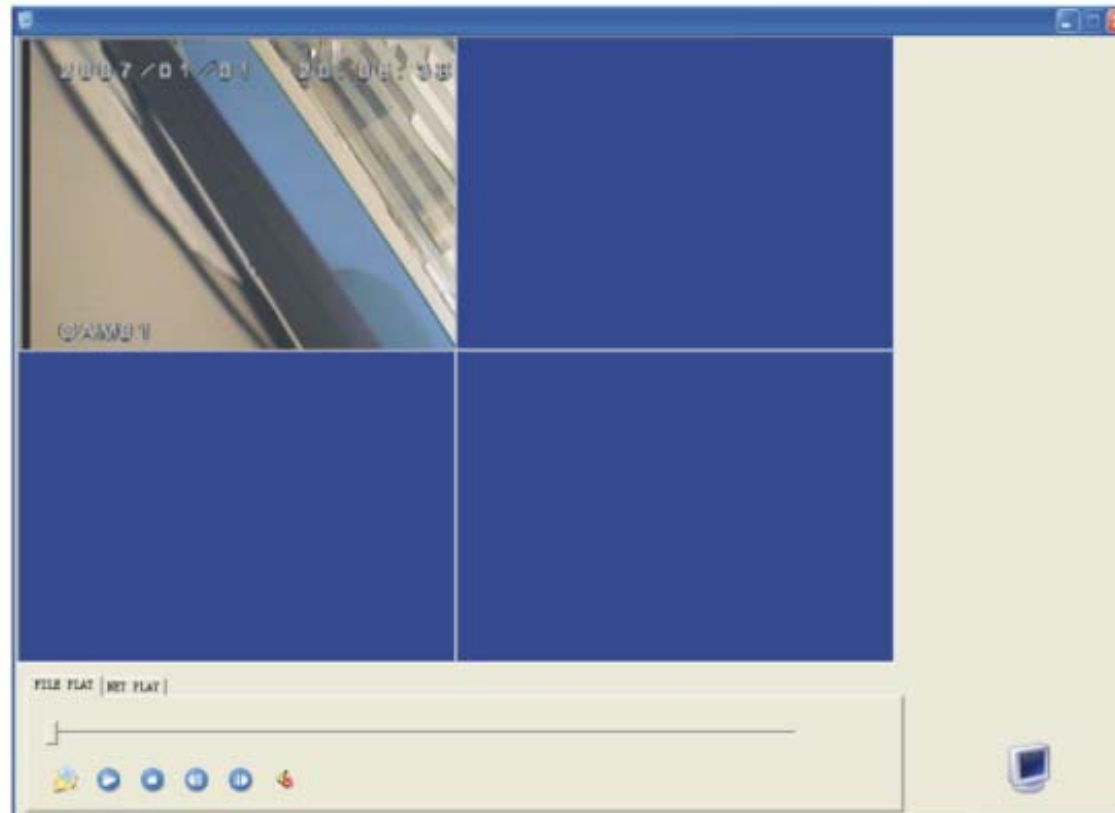
Audio

This device supports stereo audio input and output function. You can use the panel jack, or the audio i/o interface on the backboard. The audio input supports LINE IN.

For the audio monitoring operation, refer “AUDIO” key instructions.

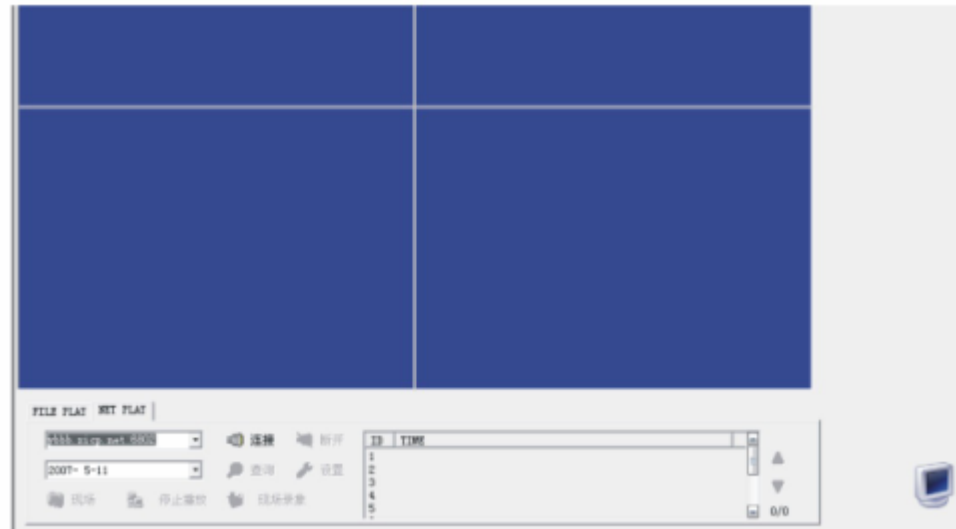
AUDIO	2007/01/01	00:51:56
LOSS		LOSS
CAM01		CAM02
CAM03		CAM04
LOSS		LOSS

Operation of PC player software



- (1) This software can play the network client's local record file, USB backup file and DVR hard disk's file.
- (2) Click "Open" button and select *.avh files to start playing. It doesn't support other formats.
- (3) It supports functions like Stop, Pause, RW, and FF. You can also select record play.

Operation of client software



- After entering IP or domain and port, click connection. After the connection succeeds, press the on-site button at the bottom left. The system will display the on-site image of the four channels.
- if you want to play remote record file, click "Stop:" button. Enter the search time and click "Search" button. The list displays the record files. Select one file, and then right-click the mouse. Select play function to play the record file. If you want to make backup, select backup function to back up the corresponding file to your device.
- After the connection succeeds, you can set the parameters. Click "Setup" button to select the location of the backup file. If in the local area network, you can select LAN transfer mode. If in Internet, you can select WAN transfer mode to make sure the image transfer effect.

Image quality selection and available recording time

The image quality is divided into five grades: excellent, good, general, poor, and very poor.

The higher the image quality is, the larger space the image takes, and the shorter the hard disk's available time is. Therefore, you shall select proper image quality and proper capacity hard disk.

The image quality shall be identified before the recording operation. In the recording process, you can't change its image quality.

In the record setup of four-channel general image quality, the hard disk utilization is about 900MByte/hour.

Chapter 6

Appendix 1 Outside dimensions



Appendix 2 Specifications

Item	Main Specifications & Parameters
Video input	4-channel complex video input: 1.0V p-p/75Ω,BNC connectorX4
Video output	Complex video output: 1.0V p-p/75Ω,BNC connectorX1, VGA output, VGA connector X1
Audio input	2-channel audio input, BNC connectorX2, EJ connector X1
Audio output	2-channel audio output, BNC connectorX2, EJ connector X1

Alarm input	4-channel photo coupler input
Alarm output	Relay output, NO, NC, COM
Alarm method	Sensor input alarm, video dynamic detection alarm, video loss alarm
Backup method	USB2.0 interface
Resolution	Record: PAL 352X288; NTSC 352X240
	On-site: PAL 720X576; NTSC 720X480
Hard disk	IDE interface, support capacity up to 500G
Electric source	DC12V .4A
Outside size	315(L) X275 (W) X58 (H) mm
Net weight	2.3kg

Appendix 3 Troubleshooting

Failure	Possible Reason
After DC12V electric source is connected and the power switch is turned on, the power lamp on the panel doesn't become lit.	1) The power cord doesn't work; 2) The power switch fails.
After the recorder starts, it restarts repeatedly.	1) Improper program is updated or the software is damaged.