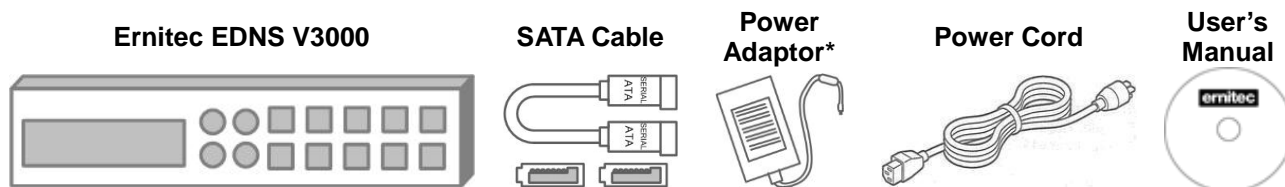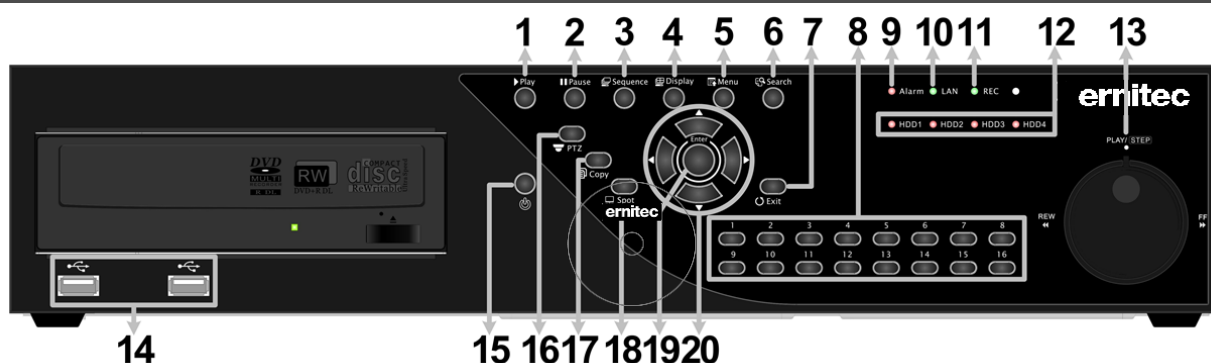# Ernitec EDNS V3000
Setup Guide

Package Content

Inspect the packaging carton. Make sure the **Ernitec EDNS V3000** is properly delivered. Remove all items from the box and make sure the box contains the following items.

Ernitec EDNS V3000	**SATA Cable**	**Power Adaptor***	**Power Cord**	**User's Manual**

*Power adaptor is provided for Standard Models only.

Front Panel

1	**Play**	Press once to start the playback of recorded video. Press again to exit.
2	**Pause**	Press this key to freeze the current viewing screen.
3	**Sequence**	Press this key to start automatic sequence display of cameras.
4	**Display**	Press this key to view in full-screen or multiple window modes.
5	**Menu**	Press this key to enter the OSD setup menu.
6	**Search**	Press this key to search recorded video by date/time or event.
7	**Exit**	Press this key to cancel or exit from certain control mode.
8	**Channels**	1. In Live and Playback modes, press any key to view the corresponding video in full-screen. 2. In input interface, 1~10 can be used for direct input of numbers 0~9. 3. In Dome Camera Control mode, 1 is for entering the Set/ Go preset menu; 11~16 is for quick access of preset points 1~6.
9	**Alarm LED**	It lights up when an alarm is triggered.
10	**Network LED**	It lights up when network is connected. In addition, it blinks when data is being transmitted via the network.
11	**Record LED**	It blinks when videos are being recorded.
12	**HDD LEDs**	The LEDs light up when disk cloning is in process. When the light is on with alert beeping, that means the corresponding HDD has error.
13	**Shuttle/ Jog**	This is used to control playback operations.
14	**USB 2.0 Port**	The USB 2.0 port allows users to connect an external USB device to the unit, such as a USB ThumbDrive or a USB mouse.

15	**Power Key**	Press and hold this key to trigger the quick shutdown function.
16	**PTZ**	Press this key to enter Dome Camera Control mode.
17	**Copy**	This key is used for marking time in quick video export function.
18	**Spot**	Press this key to enter Call Monitor Control mode.
19	**Enter**	1. In OSD menu or selection interface, press these key to make the selection or save settings. 2. In live full-screen viewing mode, press this key to view a 2× zoom image; press it again to return.
20	**Direction Keys**	1. In Zoom mode, these keys function as normal direction keys. 2. In the OSD setup menu, the direction keys are used to move the cursor to previous or next fields. To change the value in the selected field, press UP / DOWN keys.

Rear Panel
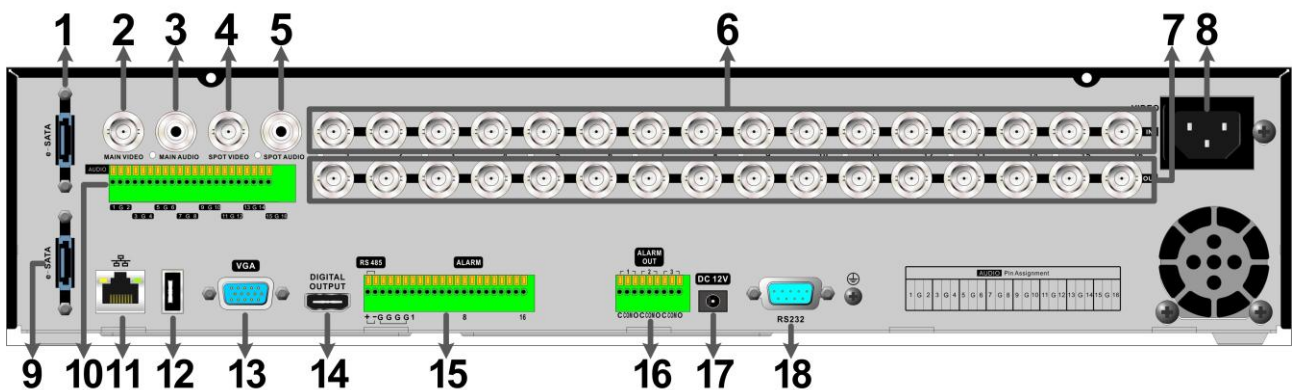
1	**e-SATA (for Export)**	Users can connect an e-SATA storage device via this port to export recorded videos in the DVR.
2	**Main Monitor-BNC**	The DVR can connect to a monitor via a BNC connector.
3	**Main Monitor Audio Out**	A RCA connector is provided to output audio associated with the main monitor.
4	**Call Monitor (BNC)**	The call monitor is used to display full screen video of all installed cameras in sequence. The BNC Call Monitor connector allows users to connect the DVR with an optional call monitor.
5	**Call Monitor Audio Out**	A RCA connector is provided to output audio associated with the call monitor.
6	**Video In (BNC)**	A group of BNC connectors is provided for video input streams from installed cameras.
7	**Vidoe Out (BNC)**	The same amount of BNC connectors underneath Video In (BNC) are offeded for looping out the video input.
8	**Power Jack (Plus Model)**	Connect the power cord shipped with the unit. Use of other power supply cords may cause overloading.
9	**e-SATA (for Record)***	Users can connect an e-SATA storage device via this port to expend HDD capacity of the DVR.
10	**Audio In**	A terminal block Audio connector is provided for the DVR to connect audio source devices.
11	**LAN 10/100/1000M (RJ-45)**	The DVR is capable of networking. Once the unit is connected to the LAN network, users can remotely access the DVR through the remote software on a PC.
12	**USB Port**	This USB port allows users to connect a USB mouse with PS/2 protocol.

13	**Main Monitor – VGA**	The DVR can connect a VGA monitor via the VGA connector.
14	**Main Monitor – Digital Output**	The DVR can connect to a Digital Output monitor via an optional Digital Output connector.
15	**Alarm Inputs & RS-485**	The DVR provides alarm inputs and RS485 ports that offer users to connect the DVR to alarm input and RS485 devices.
16	**Alarm Outputs**	The DVR provides alarm outputs ports that allow users to connect the DVR to alarm output devices.
17	**Power Jack (Standard Model)**	The DVR has a 12V DC power connection jack. Please connect the power supply adapter shipped with the unit.
18	**RS232**	The RS232 communication port is for connection to a POS device.

*The e-SATA port for record purpose is provided for Plus Models only.

Pin Definition of Audio In, Alarm Iuputs & RS-485 and Alarm Outputs

Audio In:

Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	Audio In 1	7	Audio In 5	13	Audio In 9	19	Audio In 13
2	GND	8	GND	14	GND	20	GND
3	Audio In 2	9	Audio In 6	15	Audio In 10	21	Audio In 14
4	Audio In 3	10	Audio In 7	16	Audio In 11	22	Audio In 15
5	GND	11	GND	17	GND	23	GND
6	Audio In 4	12	Audio In 8	18	Audio In 12	24	Audio In 16

Alarm Inputs and RS-485:

8CH models:

Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	RS485 D+	7	Alarm In 1	13	Alarm In 7	19	Reserved
2	RS485 D−	8	Alarm In 2	14	Alarm In 8	20	Reserved
3	GND	9	Alarm In 3	15	Reserved	21	Reserved
4	GND	10	Alarm In 4	16	Reserved	22	Reserved
5	GND	11	Alarm In 5	17	Reserved		
6	GND	12	Alarm In 6	18	Reserved		

16CH models:

Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	RS485 D+	7	Alarm In 1	13	Alarm In 7	19	Alarm In 13
2	RS485 D−	8	Alarm In 2	14	Alarm In 8	20	Alarm In 14
3	GND	9	Alarm In 3	15	Alarm In 9	21	Alarm In 15
4	GND	10	Alarm In 4	16	Alarm In 10	22	Alarm In 16
5	GND	11	Alarm In 5	17	Alarm In 11		
6	GND	12	Alarm In 6	18	Alarm In 12		

Alarm Outputs:

Pin	Definition	Pin	Definition	Pin	Definition
1	Alarm Out 1 Close	4	Alarm Out 2 Close	7	Alarm Out 3 Close
2	Alarm Out 1 COM	5	Alarm Out 2 COM	8	Alarm Out 3 COM
3	Alarm Out 1 Open	6	Alarm Out 2 Open	9	Alarm Out 3 Open

Install HDDs (Plus Models Only)

For Plus Models, users can install up to 4 HDDs to create a preferred RAID disk type. Note the SATA port numbers on the SATA board (as shown in below figure) are linked to the indication numbers in the OSD menu.The installed HDDs must be the same storage capacity, and it is strongly recommended to use HDDs of the same model. Please refer to the following steps to install HDDs into the DVR.
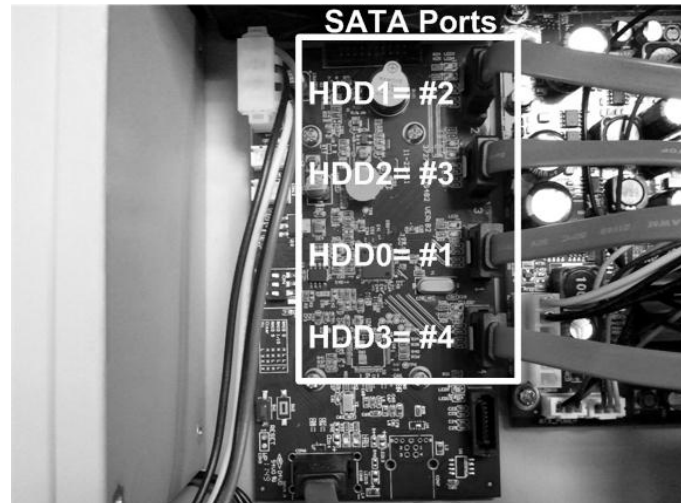
NOTE: Please avoid using Seagate SV35 series and WD AVGP series HDDs.

- Release the screws and remove the cover of the **Ernitec EDNS V3000**.
- First fix the HDDs onto the mounting kits. Then connect the power and SATA cables to the HDDs and fix the HDDs onto the bottom of the DVR.
- Connect the SATA cables to the SATA ports on the SATA board.
- Put the cover back to the DVR and connect the power cord and required equipments.
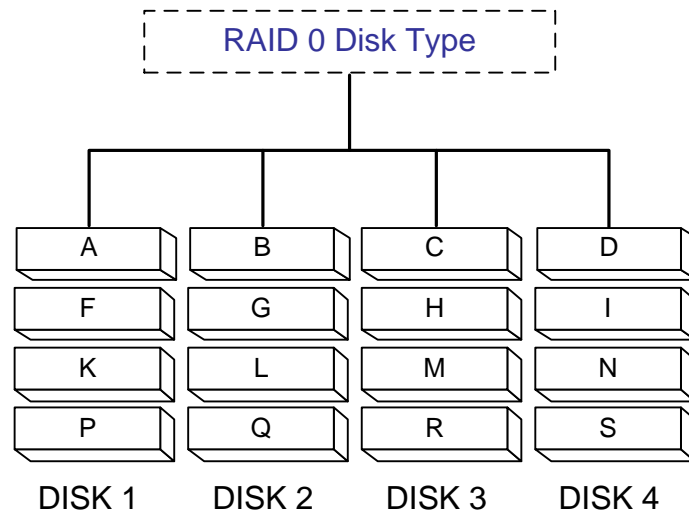
For users who are not familiar with RAID disk types, please read the next section about facts of different RAID disk types BEFORE creating the RAID disk in the DVR.

RAID Disk Types (Plus Models Only)

RAID, the acronym for Redundant Array of Independent Disks, is a data storage scheme that stores data dispersedly in multiple disks to prevent data loss. The DVR provides four different types of RAID disks: RAID 0, RAID 1, RAID 5 and RAID 10. Refer to the description listed below, users can choose their preferred RAID disk types.
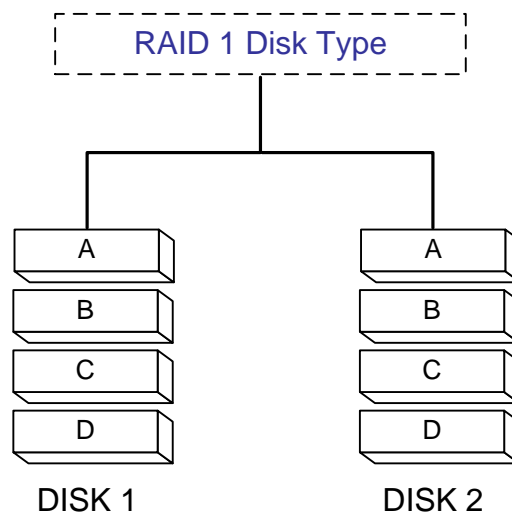
RAID 0:

Data in RAID 0 will be separately stored in a minimum of 2 different disks. This helps to increase writing speed. The order of how data blocks are stored is illustrated as below. RAID 0 is not fault tolerable. Just ONE disk failure in ANY disk of the array will destroy everything in the database.
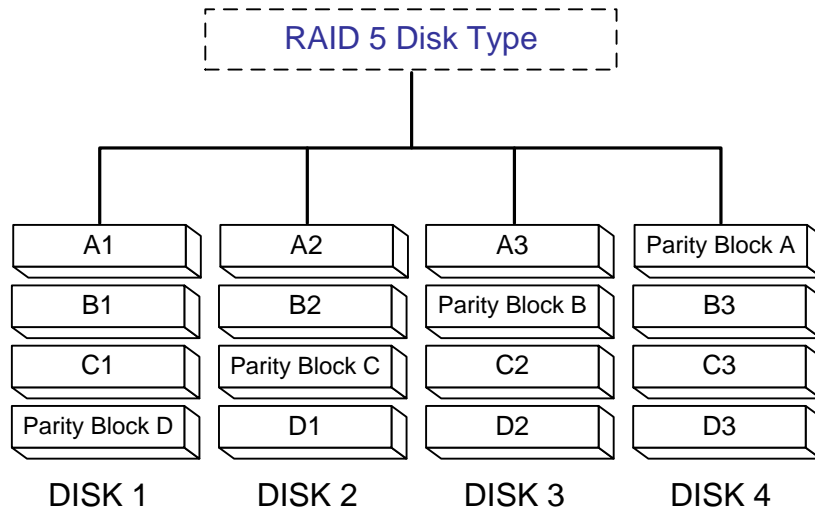
```
                    RAID 0 Disk Type

        A          B          C          D
        F          G          H          I
        K          L          M          N
        P          Q          R          S
     DISK 1     DISK 2     DISK 3     DISK 4
```

RAID 1:

RAID 1 enables the DVR to store data in 1 disk drive and make copies of the stored data to the other installed disk drive. RAID 1 requires two disks, and it is fully fault tolerable.

```
                RAID 1 Disk Type

            A                   A
            B                   B
            C                   C
            D                   D
         DISK 1              DISK 2
```
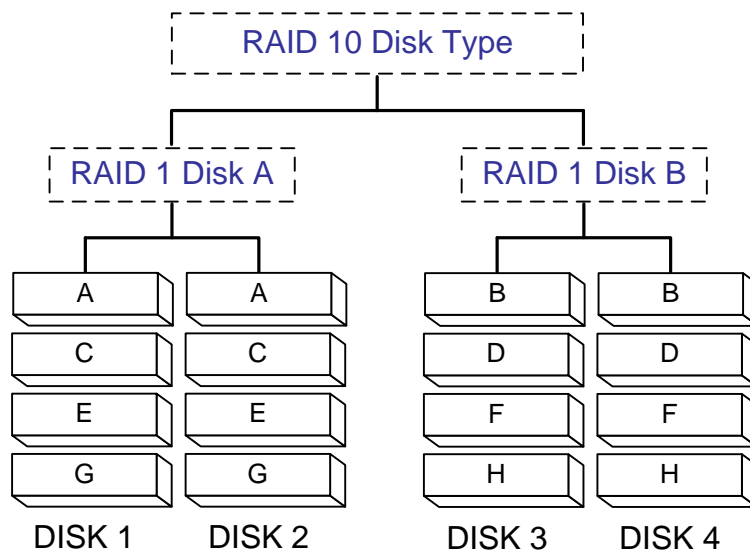
RAID 5:

RAID 5 stores the data separately into the installed disks, and creates parity blocks for the data. What parity blocks do is to recover failed part of the data. For example, when Disk 1 has errors: Parity Block A can repair "A1"; Parity Block B can repair "B1"; Parity Block C can repair "C1". The data stored in Disk 1 is now fully recovered. Note that RAID 5 requires a minimum of 3 disks, and it allows 1 disk drive failure.

```
                        ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                        │   RAID 5 Disk Type   │
                        └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘

        ┌─────────────┐   ┌─────────────┐   ┌──────────────┐   ┌──────────────┐
        │     A1      │   │     A2      │   │      A3      │   │ Parity Block A│
        ├─────────────┤   ├─────────────┤   ├──────────────┤   ├──────────────┤
        │     B1      │   │     B2      │   │Parity Block B│   │      B3      │
        ├─────────────┤   ├─────────────┤   ├──────────────┤   ├──────────────┤
        │     C1      │   │Parity Block C│  │      C2      │   │      C3      │
        ├─────────────┤   ├─────────────┤   ├──────────────┤   ├──────────────┤
        │Parity Block D│  │     D1      │   │      D2      │   │      D3      │
        └─────────────┘   └─────────────┘   └──────────────┘   └──────────────┘

           DISK 1           DISK 2            DISK 3             DISK 4
```

RAID 10:

RAID 10 is a combination of two RAID 1 disks, which splits data into two parts to increase data writing speed and in the mean time creates backups for each part. For example, 4 HDDs are connected to create two RAID 1 disks **A** & **B**, which will split data into two parts. RAID 1 disk **A** will store half of the video data to DISK 1 and mirroring to DISK 2. In the mean time, RAID 1 disk **B** will store the other half of the video data to DISK 3 and mirroring to DISK 4. Hence, RAID 10 disk will handle video faster than RAID 1 disk.

```
                        ┌ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┐
                        │   RAID 10 Disk Type  │
                        └ ─ ─ ─ ─ ─ ─ ─ ─ ─ ─ ┘

          ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐          ┌ ─ ─ ─ ─ ─ ─ ─ ─ ┐
          │  RAID 1 Disk A   │          │  RAID 1 Disk B   │
          └ ─ ─ ─ ─ ─ ─ ─ ─ ┘          └ ─ ─ ─ ─ ─ ─ ─ ─ ┘

      ┌──────┐  ┌──────┐          ┌──────┐  ┌──────┐
      │  A   │  │  A   │          │  B   │  │  B   │
      ├──────┤  ├──────┤          ├──────┤  ├──────┤
      │  C   │  │  C   │          │  D   │  │  D   │
      ├──────┤  ├──────┤          ├──────┤  ├──────┤
      │  E   │  │  E   │          │  F   │  │  F   │
      ├──────┤  ├──────┤          ├──────┤  ├──────┤
      │  G   │  │  G   │          │  H   │  │  H   │
      └──────┘  └──────┘          └──────┘  └──────┘

       DISK 1    DISK 2            DISK 3    DISK 4
```

⚠ **NOTE**: Due to the charastistics of RAID 10 disk types, users must install 4 HDDs to create RAID 10 disk type.

Power On the DVR

Please follow the proper power on procedures to avoid damaging the DVR.

- Connect all necessary components, e.g. monitor and cameras, before power on the DVR.
- Check the type of power source before connecting the power adaptor to the DVR. The acceptable power input is between AC110V ~ AC240V.

Select Viewing Mode:

- Press **Display** repeatedly to select the wanted display mode. The available viewing modes are full-screen, 2×2, 3×3, and 4×4 split-window.
- Press **Pause** to pause the current viewing image.

Create RAID Disk (Plus Models Only)

For Plus Models, follow steps below to enter the OSD main menu and create RAID disk of the DVR.

Enter OSD Main Menu:

- Press **MENU** to enter the OSD main menu.
- Select the administrator account "**admin**" to login. Enter the preset password "**1234**".
- It is strongly suggested to change the password to prevent unauthorized access.

Create RAID Disk:

- Go to <**Database Setup**> → <**Internal Disks**>, a new HDD will be listed because the RAID disk is not created yet. Move the cursor to the new HDD and press **ENTER**. Select <**Remove**> under the <**Action**> column so that it can be eliminated from current database.
- Go to <**Database Setup**> → <**RAID Disks**>, press **ENTER** at any displayed HDD and choose a preferred RAID disk type under the <**Action**> column.
- The DVR will reboot and start to format the HDDs after boot up.
- After the HDDs are formatted, the DVR will automatically add the created RAID disk to the database. Go to <**Database Setup**> → <**Internal Disks**> to confirm the RAID disk is created and added to the database.

Basic Setup

Enter the OSD main menu and setup some basic configuration of the DVR. The basic configuration can be set via either the DVR or DVR**Remote**, the remote software.

Enter OSD Main Menu:

- Press **Menu** to enter the OSD main menu.
- Select the administrator account "**admin**" to login. Enter the preset password "**1234**".
- It is strongly suggested to change the password to prevent unauthorized access.

Date / Time Setting:

Follow steps below to setup date/time before the recording starts. Refer to the User's Manual for advanced setup of Time Sync function.

- Select <**Date/Time**> in System Setup menu.
- Select the date and time using **LEFT**/**RIGHT** keys; then adjust the value using **UP**/**DOWN** keys.
- The new date and time settings take effect after the changes are confirmed.

Language Setting:

If users wish to change language of the DVR system, follow the steps below.

- Select <**Language**> in System Setup menu and press **Enter**.
- Press the **UP**/**DOWN** keys to select the desired language.

Network Setup

Configure the LAN setup for the DVR to properly function with Ethernet connection.

- From OSD main menu, select <**System Setup**> → <**Network Setup**>, set the <**LAN Select**> item to <**LAN**> or <**PPPoE**> according to the network application, and enter <**LAN Setup**>.
- For DHCP user, set the DHCP to <**ON**>. The IP address, Netmask, Gateway and DNS settings are retrieved from network servers. DHCP is dynamic that the settings change from time to time.
- For Non-DHCP user, set the DHCP to <**OFF**>. Enter an IP address, Netmask, Gateway, and DNS settings. Please obtain the information from the network service provider.
- To change the IP address, Netmask, Gateway and DNS value, press **UP**/**DOWN** keys to move the cursor to the item. Use **LEFT**/**RIGHT** keys to access each section of the value and press ENTER, then change the value using **UP**/**DOWN** keys.
- PPPoE users must set the <**PPPoE Account**>, <**PPPoE Password**> and <**PPPoE Max Idle**> as well.
- When the settings are complete, press **Enter** to confirm and save the settings; or **Exit** to abort.
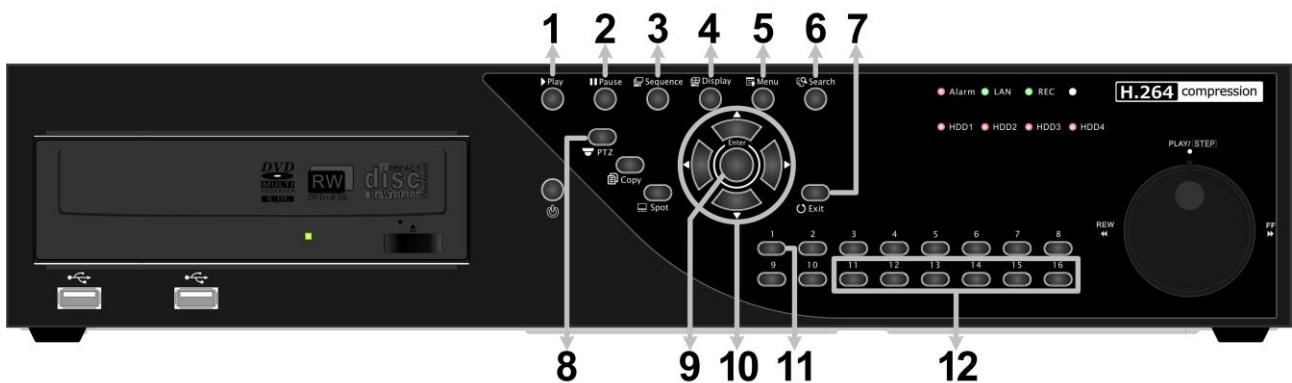
Dome Camera Control

Dome Camera Connection & Settings:

- See section <u>Pin Definition of Alarm Iuputs & RS-485, and Alarm Outputs</u> for RS-485 port pin definition.
- Refer to the following figure. Connect the R+, R- terminals on the dome camera to the D+, D- terminals on the RS-485 port by RS-485 cable respectively.
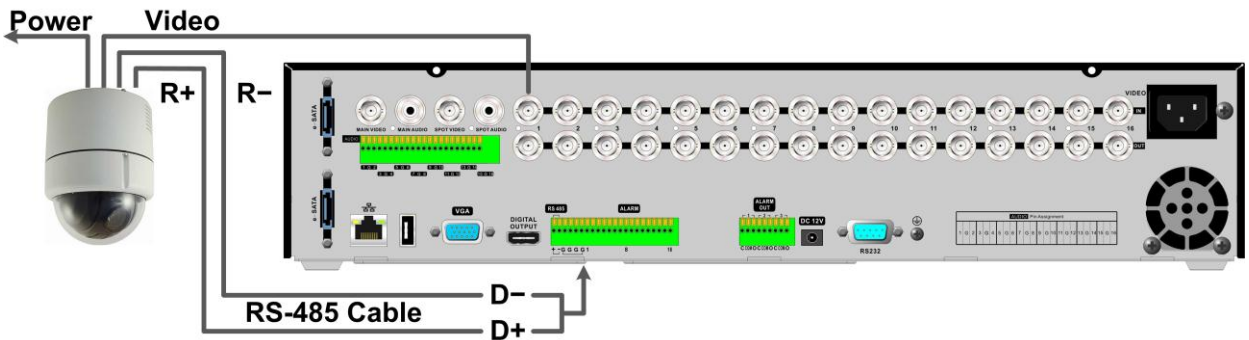
- To set up dome camera's protocol and ID, press **Menu** to access the OSD main menu, and select <**Camera Setup**>. Then select <**Dome Protocol**> and choose the corresponding protocol. Next select <**Dome ID**> and choose a preferred ID number. Note that the ID number must match the ID address defined by the dome camera.
- To configure the RS-485 parameters, select <**System Setup**> from OSD main menu, and then select <**RS485 Setup**>. The default RS-485 settings are 9600 Baud, 8 Data Bits, 1 Stop Bit and No Parity.

Control Buttons in Dome Camera Control Mode:

1	Iris Close	**5**	Zoom Out	**9**	Enter / Auto
2	Iris Open	**6**	Zoom In	**10**	Pan / Tilt
3	Focus Far	**7**	Esc	**11**	Set / Go Preset
4	Focus Near	**8**	Enter Dome Camera Control Mode	**12**	Go Presets 1~6

Basic Playback Operation

Search by Time:

- Press **Search** to enter the Search menu.
- Move the cursor to "From" and press **Enter** will start playing recorded video from the specified "From" time.
- Move the cursor to "End" and press **Enter** will start playing recorded video from the specified "End" time.
- Move the cursor to "Select" and press **LEFT**/**RIGHT** to choose date/time. Press **Enter** and adjust the values by **UP**/**DOWN** keys. Press **Enter** again to confirm or press **Exit** to abort.
- Move the cursor to <**Begin Playback**> and press **Enter** to start playing back recorded video of the selected time. Press **Play** again to return to live video.

> **NOTE:** If there is no available recorded video that matches the specified time and date, the unit starts to playback from the next available video.

Search by Event:

- Press **Search** to enter the Search menu.
- To search event video that was recorded on a specific camera, use **LEFT**/**RIGHT** keys to move the cursor and press **Enter** to select or de-select a channel.
- Move the cursor to <**Event List**> and press **Enter** to list the event video of the selected channels.
- The list displays each event by date, time, triggered camera and alarm type. The latest recorded event video will be listed on the top. To exit the event list, press **Exit**.
- Use **UP**/**DOWN** keys to scroll through the Event List. Press **Enter** to play back the selected event record.

> **NOTE:** The event list displays only the first 1024 events; as some events are deleted, others are displayed.

Playback Controls:

Button	Description
LEFT	The button is for rewinding the recorded video while playing back. Press the button repeatedly to increase the speed of reverse playback by 1x, 2x, 4x, 8x, 16x, or 32x.
RIGHT	The button is used to play the recorded video fast forward. Press the button repeatedly to increase the speed of forward playback by 1x, 2x, 4x, 8x, 16x, or 32x.
Pause	Press **Pause** to pause the playback video. When the recorded video is paused, press **LEFT** / **RIGHT** to resume playback video single step reverse / forward respectively. Press **Pause** again to continue playing back video.
Play	Press to start the playback or to stop playing back video and return to live mode.

DVR Status Bar Icons

Icons that will be displayed in the status bar are listed in the following table with their descriptions.

Item	Icon	Description	Item	Icon	Description
1		Main Monitor	13		Pause @ Playback mode
2		Call Monitor	14		End of Video
3		Monitor Active / Inactive	15		Quick Export
4		Sequence	16		Stamp A
5		Record	17		Stamp B
6		Event Record	18		Disk Error
7		Freeze @ Live Mode	19		Disk Full
8		Dome Camera Control	20		Disk Overheat
9		Zoom	21		No Disk
10		Forward Playback Speed: 1x, 2x, 4x, 8x, 16x, 32x	22		Disk Almost Full
			23		Guest
11		Backward Playback Speed: 1x, 2x, 4x, 8x, 16x, 32x	24		User's Authority Level
12		HDD Usage	25		HDD Cloning Status (Plus Models Only)

26		Lock	29		RAID Disk Correct (Plus Models Only)
27		Fan Error	30		RAID Disk Error (Plus Models Only)
28		RAID Disk Clone Completed (Plus Models Only)	31		No RIAD Disk (Plus Models Only)

NOTE: For HDD Cloning Status icons, a number will be shown in the center of the icon to represent the group of HDD that is cloning. In the mean time, percentage will be displayed underneath the icon.

NOTE: The Disk Clone Completed icon will be displayed when HDD cloning is completed and will disappear when any key is pressed.

Connect the DVR via the Remote Software

Setup Requirements:

- Make sure the PC is connected to the Internet.
- Obtain IP address of the **Ernitec EDNS V3000**. To check the DVR's IP address, press **Menu** on the front panel and select <**System Setup**> → <**Network Setup**> → <**LAN Setup**> → <**IP**> to check the IP.

Changing Internet Setting:

- Start the IE; select <**Tools**> from the main menu of the browser, then <**Internet Options**> and then click the <**Security**> tab.
- Select <**Trusted sites**> and click <**Sites**> to specify its security setting.
- Uncheck "Require server verification (https:) for all sites in this zone". Type the IP address of the unit in field and click <**Add**> to add this website to the zone.
- In the Security Level area, click <**Custom Level**>. Under <**ActiveX controls and plug-ins**>, set all items to <**Enable**> or <**Prompt**>.
- Click <**OK**> to accept the settings and close the <**Security Settings**> screen.

Using the Remote Software:

- Start the IE and enter the IP address of the **Ernitec EDNS V3000** in the address bar.
- The ActiveX controls and plug-ins dialog will show twice for confirmation; click <**YES**> to accept ActiveX plug-ins. The DVR**Remote** plug-ins will be downloaded and installed on the PC automatically when the connection is successfully made.

NOTE: Do not enter any leading "0" characters in the address, for example, "192.068.080.006" should be entered "192.68.80.6".

NOTE: If the default trigger port 80 is changed into another one, port 81 for example, then the IP address should be entered as "192.68.80.6:**81**".

- Version verification starts automatically to verify whether DVR**Remote** was installed. This process may take up to 30 seconds.
- When the software is completely downloaded and installed, the Login Screen is displayed.
- Enter the username and password. The default usernames and passwords are **admin** / **1234** and **user** / **4321**.

The following picture shows the display window of the DVR**Remote**:

Refer to the table below for brief description of functional items:

Item	Description	Item	Description
1	Instant Recording	10	Search Event List
2	Deflicker On/Off at Playback	11	Capture Snapshot
3	Smoothen the Image	12	4:3 Viewing Aspect
4	Audio On/Off	13	HDD Status
5	Select Camera	14	Playback Control
6	Display Mode	15	Select Picture Size
7	View Live Camera	16	Bandwidth – Normal/Dual Stream
8	Playback Video	17	Download DVRPlayer
9	Setup Menu		

For more information on DVR**Remote**, see User's Manual.

DVRRemote Playback

Playback Remote Video:

- Click <**Play**> on the main window toolbar, and then <**Remote Playback**> tab.
- The <**From**> and <**To**> on top of the screen display the date and time from which recorded video is available for playback.
- Choose <**Playback**> in <**Select**> field for playback recorded video.
- Select the date and time of the segment to play back from the <**Start**> field. The date and time can be changed either by typing desired numbers directly or using the arrow buttons.
- Click <**OK**> to start the playback, or click <**Close**> to abort.

Playback Local *.drv File:

- Click <**Play**> on the main window toolbar, and then <**Local Playback**> tab.
- Click <**Open**> and the file selection screen is displayed. Select the *.drv video file to playback and click <**OK**>.
- Click <**OK**> to start the playback, or click <**Cancel**> to abort.
- View the video playback using the Playback controls.
- To end the playback, click <**Live**> to return to live video.

Playback Local *.avi Files:

- Start the windows media player or other media player from <**Start**> menu (or any other possible access).
- Select <**File**> and then <**Open**>.
- Select the wanted *.avi file, and click <**Open**>.

⚠ **NOTE:** The *.avi files for each channel are stored separately. Therefore the video can be played back in single channel, full screen mode only.

Playback Event Video:

- Click **SEARCH** on the main window toolbar. The Event List appears.
- Scroll through the Event List and highlight the interested events.
- Double-click on the desired event to view the event video.

Playback Controls:

Fast Backward / Step Backward

Fast Forward / Step Forward

Play / Pause