



VDH-NK385

# Hardware Manual

2015 JUL V1.2

---

## Contents

---

|                                    |    |
|------------------------------------|----|
| A. CAUTION .....                   | 1  |
| B. Introduction.....               | 2  |
| 1. Product Overview.....           | 2  |
| 2. Main functions.....             | 2  |
| C. Unpacking.....                  | 3  |
| 1. Accessories .....               | 3  |
| 2. Unpacking.....                  | 3  |
| D. Installation.....               | 3  |
| E. Product appearance .....        | 4  |
| 1. Front Panel.....                | 4  |
| 2. Rear Panel .....                | 5  |
| 3. Installation Illustration.....  | 6  |
| Video input.....                   | 6  |
| Connections for video outputs..... | 7  |
| Audio Inputs.....                  | 7  |
| Audio Output.....                  | 8  |
| AlarmIn/AlarmOut connections.....  | 8  |
| F. Q & A and Maintenance .....     | 9  |
| 1. Q & A.....                      | 9  |
| 2. Maintenance .....               | 11 |
| G. Appendix : Specifications ..... | 12 |
| 1. 16CH NVR .....                  | 12 |

## A. CAUTION

To our dear customer!

Thank you for using our products. If you encounter any problems when using, please do not hesitate to contact our resellers. We will provide excellent services to you via our resellers.

The software/hardware improvements of this series are subject to change without notice to you in advance. Before using, please read this user manual carefully to ensure that you can use the device correctly and safely.

Caution for this NVR series

- After installation, never put anything heavy over this device. Owing to the use of the harddrive(s) insides this device, check the cooling fan periodically to see if it is in good condition. Never use this device when the cooling function is out of order!
- Do not allow any solid object or liquid fall into or penetrate into the device.
- Use cleaning tools (brushes) regularly to clean circuit boards, connectors, fans, chassis, etc. Before cleaning, turn off the power and unplug the power.
- Do not attempt to disassemble the equipment, repair, or replace parts. In case the machine does not work properly, please contact the resellers or manufacturers. In the shortest time, we will solve the problems you have during using.
- When not using the remote control for a long time, take out the inside battery To prevent the control from the damage coming from battery leakage!
- If this equipment connects to outdoor cameras or other external alarm devices, ground this equipment to prevent it from electrical surges.
- This NVR supports remote video monitoring via Internet. Free or non-free domain names provided by ISPs are needed for the monitoring functions. Free domain names may sometimes have problems and nothing to do with NVR. Non-free domain names have less problems. Choose the domain names carefully before using the networking function.

Operating environment

- Keep and use this device at places where temperature ranges 0°C~40°C. Avoid direct sunlight or near heat sources.
- Do not install this equipment in a humid environment
- Do not expose this equipment in smoky, dusty environments;
- Avoid strong collision, do not drop the machine
- Keep the installation level, install in a stable place, avoid the product falling;
- Do not block any ventilation openings. And ensure well ventilation around the machine
- Please use this equipment within rated input and output current/voltage range.
- This device is for long-time use. For safety, do not have flammable items placed next to the device.

## B. Introduction

### 1. Product Overview

This equipment is an excellent digital surveillance product designed specifically for the security use. Using embedded LINUX operating system, it makes the system more stable. Using standard H.264 video compression and G.711A audio compression technology achieves audio and video functions such as high-quality, low bit rate and single-frame playback. Using TCP / IP and other network technologies, it provides strong network data transmission capacity and remote control capabilities.

This equipment can be used individually or be connected to form a powerful security monitoring network. Using professional network video surveillance software platform, be fully experienced the powerful networking and remote monitoring capabilities.

This equipment can be used for security in banks, telecommunications, power stations, justice, transport, intelligence communities, factories, warehouses, resources, water conservancy facilities and other categories.

### 2. Main functions

- Auto detect IP camera in LAN.
- Multiplex and maximize hard drive performance.
- Sequence feature for easy liveview monitoring.
- Motion events mark on time bar for faster event searching during playback.
- P2P functionality.
- QR Code scanning for fast auto connection.
- Cloud real-time monitoring.
- Support SATA / SATA II hard drive up to 8TB.
- Supports 5 Mega Pixel.
- Support Power Over Coaxial (PoC).

## C. Unpacking

### 1. Accessories

- ★ Power cable and adaptor AC100-240V/DC12V 4.16A x 1PCS  
AC100-240V/DC48V 2.5A x 1PCS
- ★ HDD screws x 8pcs
- ★ Operation CD x 1pcs
- ★ Mouse x 1pcs

### 2. Unpacking

When you receive the product, check first whether the packing of the equipment has obvious damage. The protective material used for the package during transport can cope with most of the accidental impact

Then, take out the device, remove the protective film of the digital video recorder and check if there is any visible damage;

Finally, open the case, check the front panel data cable, power cord, power supply fan and motherboard to see if they are connected firmly.

#### ■ Front/Rare panels

The key functions of the front panel and the interfaces of the rear panel are described in detail in the manual.

Please carefully check the plate or foil on the rear panel of the product to see if it is the model you ordered.

#### ■ Inside check

In addition to checking for visible signs of damage, be careful to check the connections between the front panel data cable, power cord and motherboard.

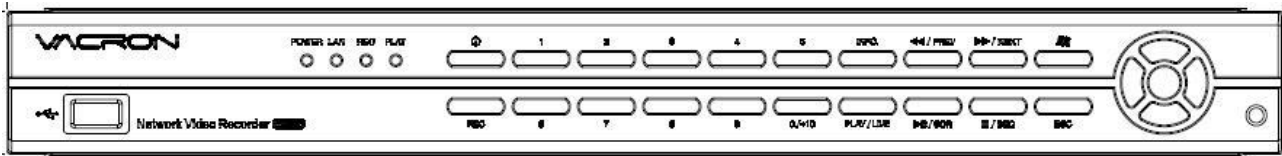
## D. Installation

Steps and cautions:


- 1 ∙ Room temperature below 35°C
- 2 ∙ Reserve space for air circulation around 15 cm (6 inches)
- 3 ∙ Chassis installation starts from bottom to up
- 4 ∙ With multiple components in the chassis, take precautions to avoid overloading to the power outlet.

## E. Product appearance

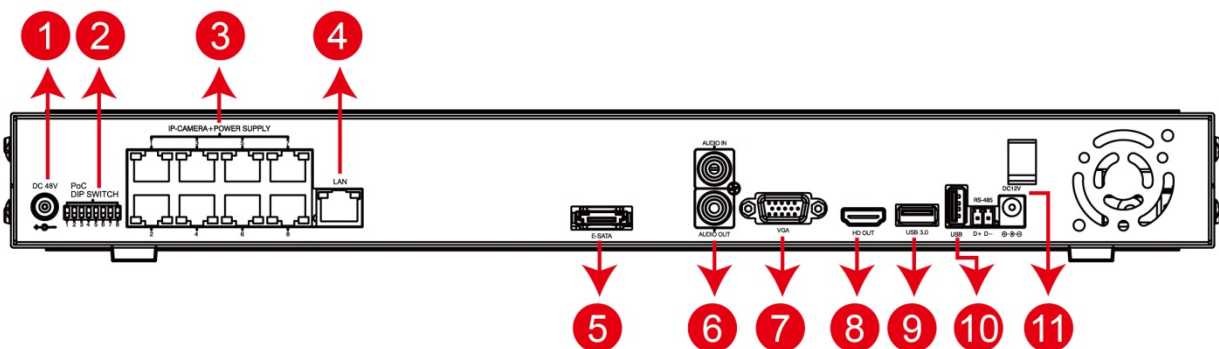
### 1. Front Panel



|           |                  |                                                                                                                                       |
|-----------|------------------|---------------------------------------------------------------------------------------------------------------------------------------|
|           | MENU             | Going to Menu                                                                                                                         |
| ESC       | ESC              | Exit                                                                                                                                  |
| /SEQ      | Stop             | Stop when Playback                                                                                                                    |
| INFO      | INFO             | Information Page                                                                                                                      |
| /PREV     | Backward         | When playing back · there are 2* 、 4* 、 8* 、 16* 、 32* 、 1/2* 、 1/4* backward speeds.<br>Under live page 、 2Ch and 9Ch can be changed |
| /NEXT     | Forward          | When playback · there are 2* 、 4* 、 8* 、 16* 、 32* 、 1/2* 、 and 1/4* forward speeds<br>Under live mode, 2Ch and 9Ch can be changed    |
| /SCR      | Play<br>Pause    | Under Live mode, going to broadcast and copy; however, under playback mode, going to broadcast.<br>Pause                              |
| PLAY/LIVE | Playback<br>LIVE | Under LIVE mode, going to playback.<br>Under playback, going to LIVE mode.                                                            |
| REC       | Record           | Under LIVE mode, going to manual force recording.                                                                                     |
|           | Power            | One touch, turn on and press 3 second, turn off.                                                                                      |
|           | Up<br>Down       | Under UI mode, select UP or Down                                                                                                      |
|           | Left<br>Right    | Under UI mode, select right or left.                                                                                                  |

|                                                                                   |                     |                                                                                                                                      |
|-----------------------------------------------------------------------------------|---------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|  | Confirm             | Confirm each operation                                                                                                               |
| 1                                                                                 | KEY_1               | Preview the 1 <sup>th</sup> Ch                                                                                                       |
| 2                                                                                 | KEY_2               | Preview the 2 <sup>th</sup> Ch                                                                                                       |
| 3                                                                                 | KEY_3               | Preview the 3 <sup>th</sup> Ch                                                                                                       |
| 4                                                                                 | KEY_4               | Preview the 4 <sup>th</sup> Ch                                                                                                       |
| 5                                                                                 | KEY_5               | Preview the 5 <sup>th</sup> Ch                                                                                                       |
| 6                                                                                 | KEY_6               | Preview the 6 <sup>th</sup> Ch                                                                                                       |
| 7                                                                                 | KEY_7               | Preview the 7 <sup>th</sup> Ch                                                                                                       |
| 8                                                                                 | KEY_8               | Preview the 8 <sup>th</sup> Ch                                                                                                       |
| 9                                                                                 | KEY_9               | Preview the 9 <sup>th</sup> Ch                                                                                                       |
| 0/+10                                                                             | KEY_0/+10           | Preview the 10 <sup>th</sup> Ch or press the same key 3 second, then press 1 or 2, going to 11 <sup>th</sup> or 12 <sup>th</sup> Ch. |
| Power                                                                             | Power Indicator     | Power on                                                                                                                             |
| LAN                                                                               | Network Indicator   | Network on                                                                                                                           |
| REC                                                                               | Recording Indicator | NVR recording function on                                                                                                            |
| PLAY                                                                              | Play Back Indicator | Playback                                                                                                                             |

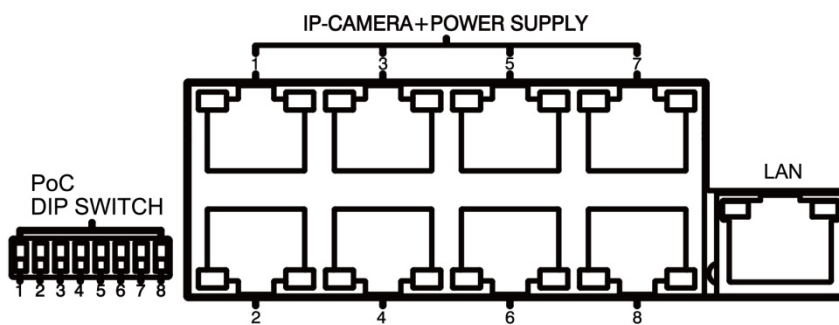
2. Rear Panel



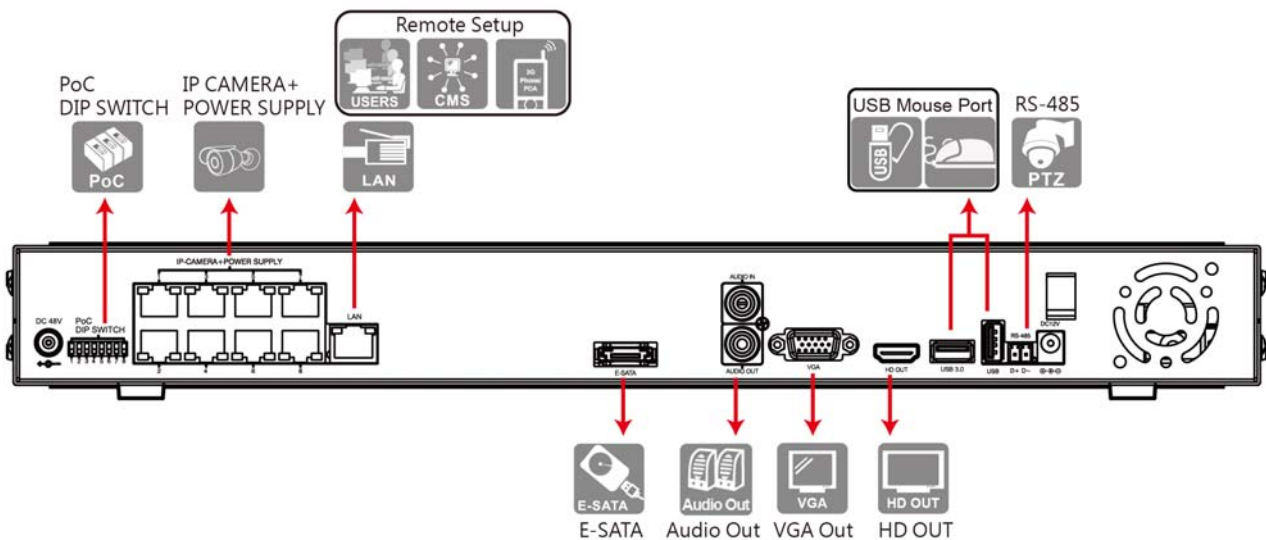
|   |                          |
|---|--------------------------|
| 1 | DC48V                    |
| 2 | POC DIP SWITCH           |
| 3 | IP CAMERA + POWER SUPPLY |

|    |           |
|----|-----------|
| 4  | LAN       |
| 5  | E-SATA    |
| 6  | AUDIO OUT |
| 7  | VGA       |
| 8  | HD OUT    |
| 9  | USB 3.0   |
| 10 | USB 2.0   |
| 11 | DC12V     |

- POC DIP SWITCH / IP CAMERA + POWER SUPPLY / LAN



### 3. Installation Illustration



- Video input  
Input interface is RJ-45 type; input signal is IP CAM  
The Video signal should comply with national standards, a higher signal to



noise ratio, low distortion, low-interference; clear images, no deformation, nature color and appropriate brightness.

◆ Make sure stable and reliable signals from cameras

Cameras should be installed in a suitable position to avoid backlighting, low-light environment, or adopts the better BLC, low-light cameras.

Cameras and digital video recorders should be common ground, stably and reliably, in order to ensure the normal operation of the cameras.

◆ Make sure the transmission cables are stable and reliable

Adopt high-quality, well-shielded coaxial cables, and choose the right model based on the transmission distance. If the distance is too far, use shielded twisted pair, video compensation equipment, optical transmission and other ways to ensure signal quality based on the specific circumstances.

Video cable should avoid strong electromagnetic interference with other devices and circuits, in particular, should avoid the current of high voltage.

◆ Make sure the connectors well-connected:

Cables and shielded cable should be well-connected firmly to avoid false, joint welding or oxidation.

■ Connections for video outputs

The video outputs include VGA and HDMI interfaces.

Pay attention to the following when you select a PC display instead of a monitor.

1. Do not remain switched on for a long time to extend the life of the equipment;
2. Regular degaussing will help to maintain the normal operation of the monitor.
3. Keep away from equipment with strong electromagnetic interference.

Using TV as video output device is an unreliable alternative. It is also required to minimize the time of use and strictly control the power, the interference caused by neighboring devices. Leakage risks of low quality TVs may result in damage to other equipments.

■ Audio Inputs

Voice input impedance is high, so the microphone must be a microphone connected to the power supply.

Like video input, voice transmission cables should avoid interference, fake, poor contact, and special attention to prevent the current of the high-voltage.

#### ■ Audio Output

The audio output parameters of NVR are generally greater than 200mv 1K $\Omega$  (BNC), you can directly connect to the low impedance headphones, powered speakers or other sound devices through a power amplifier.

When the external speakers and microphones can not achieve spatial segregation, it is prone to the phenomenon of whistling.

You may adopt the following actions,

1. Using better directional microphones
2. Adjust the speaker volume to make it lower than the value of the generated howling.
3. Using sound-absorbing materials for decoration to reduce sound reflections and improve the acoustic environment;
4. Adjusting the layout of the microphone and speakers can reduce the whistling.

#### ■ AlarmIn/AlarmOut connections

Pay attention to the following before installation.

##### 1. AlarmIn

- (a) Alarm input is grounding alarm input
- (b) The alarm input signals require voltage signals to the ground
- (c) When the alarm device is shared with two NVRs or connected to a NVR and other devices, it should be isolated by relays.

##### 2. Alarm OUT

The alarm output of the NVR can not be connected with high-power load (no more than 1A). In the output circuit, be careful about the excessive current that may cause damage to the relay. When using high-power load, extra relays are needed.

## F. Q & A and Maintenance

### 1. Q & A

Q 1. After power on, NVR doesn't work.

A: The possible causes:

1. Wrong power input
2. bad connection of power cable
3. Power error
4. Firmware update error
5. Disk error or cable problem
6. Front panel error
7. Main PCB board error

Q 2. After power-on, NVR will restart after several minutes or the screen freezes.

A: The possible causes:

1. Unstable or low input voltage
2. The hard drive has bad sectors or cable error
3. Low adaptor power
4. Front video signal not stable
5. High temperature, too much dust and the machine runs in a bad condition
6. NVR hardware error

Q 3. HDD not found after power-on

A : The possible causes:

1. No power for the Hard Drive
2. Hard Drive cable error
3. Hard Disk error
4. Main board SATA slot error

Q 4. No output: Single, multiple or all channels

A : The possible causes:

1. Wrong firmware: Update to the right firmware
2. Brightness set to 0: set it to the default value
3. No signal input or signal too weak
4. Mask used
5. NVR hardware error

Q 5. No recorded file in local side

A : The possible causes:

1. Hard Disk error
2. Desired files are overwritten

3. Recording not enabled

Q 6.No audio sound

A : The possible causes:

1. Not powered-microphone
2. Not powered-speaker
3. Audio cable error
4. NVR hardware error

Q 7.Wrong time

A : The possible causes:

1. Wrong setting
2. Bad battery connection or low voltage
3. Bad frequency oscillator

Q 8.Motion detection not function

A : The possible causes:

1. Wrong schedule settings
2. Wrong area settings
3. Low sensitivity
4. Hardware limitation for different version

Q 9.Mosaic or no video when Network preview and file playback

A : The possible causes:

1. Network traffic jam
2. Bandwidth limitation in the NVR side
3. Group mode is used in the NVR networking setting. More mosaics in group mode, not recommended.
4. Masks or channel protection in NVR side
5. No rights for the user account
6. Bad NVR output

Q 10. Networking not stable

A : The possible causes:

1. Networking not stable
2. IP conflict
3. MAC conflict
4. LAN card error (PC/NVR)

Q 11. The remote controller can not work

A : The possible causes:

1. Wrong control address
2. Long distance or poor angle
3. Battery run out

#### 4. Controller or NVR front panel is out of order

Q 12. Forget the administrative password or Internet password

A : The possible solution:

1. Please contact local customer service staff or call the customer service phone headquarters, we will guides you how to solve by the machine type and version of the program.

## 2. Maintenance

- Damped dust on the PCB board will cause a short circuit and will do something wrong to the NVR or damage it. For long-term stability of the NVR, regularly brush the circuit boards, connectors, fans and chassis to remove dust.
- Please ensure the project is well-grounded, so images, audio signal will not be disturbed. At the same time, we can protect the NVR from static or inductive voltage damage.
- Do not remove audio/video cables and RS-484 when the NVR is powered on, or they will be damaged.
- Do not use the TV interface in the NVR video output (VOUT), or the NVR output circuit will be damaged easily.
- Do not turn off the power switch directly to shut down the NVR. Use the menu shutdown or OFF button on the front panel (press more than three seconds) to turn off the power automatically to avoid hard Drive crash.
- Keep the NVR away from heats and hot places.
- Keep the NVR chassis well-ventilated for better heat dissipation.
- Have regular checks and system maintenance °

## G. Appendix : Specifications

### 1. 16CH NVR

|                               |                                                                                                                                                        |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| System                        | Operating system : Linux                                                                                                                               |
| Storage Device/Interface      | Build in SATA interface x 2, compatible SATA / SATA II / SATA III HDD( Max. 8TB)                                                                       |
|                               | E-SATA *1 (Max 16T)                                                                                                                                    |
| User Interface                | 25 operating buttons on Front panel controller                                                                                                         |
| Video And Other I/O Interface | Dual video : HD OUT/VGA                                                                                                                                |
|                               | USB 2.0 *2                                                                                                                                             |
|                               | USB 3.0 *1                                                                                                                                             |
|                               | 8CH VACRON IP-CAMERA input (RJ45 port power supply)                                                                                                    |
|                               | Headphones (speakers) sound output x 1                                                                                                                 |
|                               | Ethernet x1 – 10/100/1000(IEEE 802.3 Type 10Base-T / IEEE 802.3u Type 100Base-TX / IEEE 802.3ab Type 1000Base-T) ; Auto-MDIX                           |
| Network Protocol              | Ipv4 / ARP / TCP / UDP / ICMP / SMTP / HTTP / RTP / RTSP<br>clinet / RTCP                                                                              |
| Video Format                  | H.264 compression format                                                                                                                               |
|                               | E-Map                                                                                                                                                  |
| Live / Playback               | Real-time Live View capable 16CH VGA @30fps or 4CH 1080P @23fps                                                                                        |
|                               | 4CH 1080P @23fps Synchronous Playback                                                                                                                  |
|                               | Recording Query: Time search, Event search (IP CAM displacement, Alarm I / O triggered alarm notification)                                             |
|                               | Playback speed/ slow forward / fast forward in 5 different speed, Play Frame by Frame mode (forward or backward)                                       |
|                               | Pentaplex operation: Live/ Record/ Playback                                                                                                            |
| Event Notification            | Event Notification : Alarm I / O trigger, Motion detection, Video loss, HDD error                                                                      |
| Recording Mode                | Constant recording                                                                                                                                     |
|                               | Schedule recording                                                                                                                                     |
|                               | Alarm triggered recording (include motion detection recording): Complete event video reserved 3 seconds before and 60 minutes after event taken place. |

|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
|                       | Schedule alarm triggered recording (include motion detection recording): Complete event video reserved 3 seconds before and 60 minutes after |
|                       | Manual recording                                                                                                                             |
|                       | Only recording without live (depending on user authority)                                                                                    |
| Backup Management     | Video output format: AVI                                                                                                                     |
|                       | The USB mobile storage device or remote NAS                                                                                                  |
| System Management     | Remote Client software; live, playback set up by PC (remote side).                                                                           |
|                       | Authorization: Maximum 10 group accounts, Hierarchical authority.                                                                            |
|                       | Support 3 users log on by Client-side software or browser.                                                                                   |
|                       | Systems operation records, record login time, IP and selected video.                                                                         |
|                       | Browser : MS IE7-IE9                                                                                                                         |
| Support Equipment     | Support megapixel IP Camera video                                                                                                            |
|                       | Support CCTV camera video via Video Server.                                                                                                  |
| Power                 | NVR : DC12V / 4.16A                                                                                                                          |
|                       | IP-CAM : DC48V / 2.5A                                                                                                                        |
| Operating Temperature | 0-45°C                                                                                                                                       |

★Product specifications are subject to change without notice; please contact us for the latest information.



Manufacturer :

**FUHO TECHNOLOGY CO., LTD.**

No. 30 Lane 726 Sec. 3 Jinma Rd., Changhua City

Phone: 886-4-751- 2881 Fax: 886-4-751-6631

---