

WISENET

NETWORK VIDEO RECORDER

Product Specification Manual

XRN-2010/2011/2010A/2011A
XRN-3010/3010A
XRN-1610/1610S/1610A/1610SA



Network Video Recorder

Product Specification Manual

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- ❖ Design and specifications are subject to change without prior notice.
You can download the latest version from the Hanwha Techwin web site. (www.hanwha-security.com)
- ❖ The initial administrator ID is “admin” and the password should be set when logging in for the first time.
Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.
Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.

IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit.
Follow all the safety instructions listed below.
Keep these operating instructions handy for future reference.

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth. (Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
- 7) Do not block any ventilation openings, Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding- type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. if the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.



Standards Approvals



- 
 Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
- 
 This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
- This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

BEFORE START

This manual provides operational information necessary for using the product and contains a description about each component part and its function as well as menu or network settings.
You have to keep in mind the following notices :

- Hanwha Techwin retains the copyright on this manual.
- This manual cannot be copied without Hanwha Techwin's prior written approval.
- We are not liable for any or all losses to the product incurred by your use of non-standard product or violation of instructions mentioned in this manual.
- Prior to opening the case, please consult a qualified technician first. Whenever this is needed power must be removed from the unit.
- Before adding a hard disk drive or external storage (USB memory, USB HDD, etc), check if it is compliant with this product. For the compatibility list, contact the retailer.

Warning

Battery

It is essential that when changing the battery in the unit, the replacement battery must be of the same type otherwise there may be a possibility of an explosion.

The following are the specifications of the battery you are using now.

- Normal voltage : 3V
- Normal capacity : 210mAh
- Continuous standard load : 0.4mA
- Operating temperature : -20°C ~ +60°C
(-4°F ~ +140°F)

CALIFORNIA USA ONLY

This Perchlorate warning applies only to primary CR (Manganese Dioxide) Lithium coin cells in the product sold or distributed ONLY in California USA.
"Perchlorate Material - special handling may apply.
See www.dtsc.ca.gov/hazardouswaste/perchlorate."

Caution

- Connect the power cord into a grounded outlet.
- The Mains plug is used as a disconnect device and shall stay readily operable at any time.
- Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.
- RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS.
- When the HDD reaches its end of life, the stored video data may be damaged, and not be able to be recovered.
- The HDD status LED on the front of the system continuously blinks to indicate that the system's connection to the HDD is normal. Check the HDD status LED regularly to see if it blinks continuously. Recording may not be possible when there is an HDD failure.
Periodically check the recording status and backup important data regularly.

ATTENTION

- IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX INSTRUCTIONS.

System Shutdown

Turning off the power while the product is in operation, or undertaking improper actions may cause damage or malfunction to the hard drive or the product.
To safely power off, select Exit from the menu and click <OK> on the pop-up screen, then unplug the power cable.
You may want to install a UPS system for safe operation in order to prevent damage caused by an unexpected power stoppage. (Any questions concerning UPS, consult your UPS retailer.)

 If powered off abnormally, restarting may take more time for restoring data from hard disk drive for proper operation.

Operating Temperature

The guaranteed operating temperature range of this product is 0°C ~ 40°C (32°F ~ 104°F).
This product may not work properly if you run right after a long period of storage at a temperature below the guaranteed one.
Prior to using a device that has been stored for a long period in low temperatures, allow the product to stand at room temperature for a period.
Especially for the built-in HDD in the product, its guaranteed temperature range is 5°C ~ 55°C (41°F ~ 131°F). Likewise, the hard drive may not work at a temperature below the guaranteed one.

Ethernet Port

This equipment is in door use and all the communication wirings are limited to inside of the building.

Security Precautions

The initial administrator ID is “admin” and the password should be set when logging in for the first time.
Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.
Please, take note that it’s a user’s responsibility for the security and any other problems caused by mismanaging a password.

NVR products supporting each feature

Function	Products
Fan	XRN-3010, XRN-3010A, XRN-2010, XRN-2010A, XRN-2011, XRN-2011A, XRN-1610, XRN-1610A, XRN-1610S, XRN-1610SA
RAID	XRN-2011, XRN-2011A
iSCSI	XRN-2010, XRN-2010A, XRN-2011, XRN-2011A, XRN-1610, XRN-1610A, XRN-1610S, XRN-1610SA
PoE	XRN-1610S,XRN-1610SA
P2P	XRN-3010A, XRN-2010A, XRN-2011A, XRN-1610A, XRN-1610SA
Remote controller	XRN-1610, XRN-1610A, XRN-1610S, XRN-1610SA
Joystick	XRN-3010, XRN-3010A, XRN-2010, XRN-2010A, XRN-2011, XRN-2011A, XRN-1610, XRN-1610A, XRN-1610S, XRN-1610SA
Extended monitor	XRN-3010, XRN-3010A, XRN-2010, XRN-2010A, XRN-2011, XRN-2011A, XRN-1610, XRN-1610A, XRN-1610S, XRN-1610SA
Failover	XRN-3010, XRN-3010A, XRN-2010, XRN-2010A, XRN-2011, XRN-2011A
Distributed Recording	XRN-3010, XRN-3010A

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Product Overview

FEATURES

The product records video and audio from network cameras to a hard disk, and enables playback from the hard disk. It also provides remote monitoring environment for video and audio over the network using a remote computer.

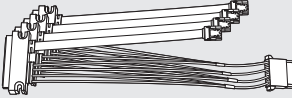
- User-friendly UI
- Supports a range of 4K camera resolutions (3840X2160, 4096X2160, 4000X3000)
- Outputs a 4K high definition image using HDMI
- Record and play video
- Record and play audio
- Supports ONVIF Profile S standard and RTP / RTSP protocols
- Display the HDD operation status by HDD SMART
- HDD overwrite enabled
- Backup using USB 2.0, 3.0 protocols and external HDD
- Simultaneous play of 16 channels
- Various Search Modes (Time, Event, Smart, Text, Backup, ARB)
- Various Recording Modes (Normal, Event, Scheduled Recording)
- Alarm Input / Output
- Remote Monitoring function by Windows Network Viewer
- Live monitoring of the network camera
- Installation Wizard Function (Easy Setup, Quick Setup)
- Supports the smartphone remote monitoring feature by P2P support (XRN-2010A/2011A/3010A/1610A/1610SA)

Package Contents

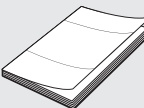
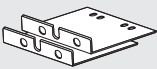
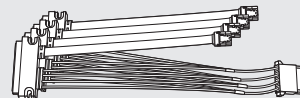
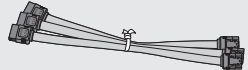
Please unwrap the product, and place the product on a flat place or in the place to be installed. Please check the following contents are included in addition to the main unit.

- 
- The appearance of the components may differ from the image shown.
 - Accessory category and quantity may differ depending on sales region.
 - For some regions, HDD is not pre-installed. HDD Fixing Screw, SATA Power Cable, SATA data cable and SATA power/data cable quantity vary depending on the model.

XRN-2010/2011/2010A/2011A/3010/3010A

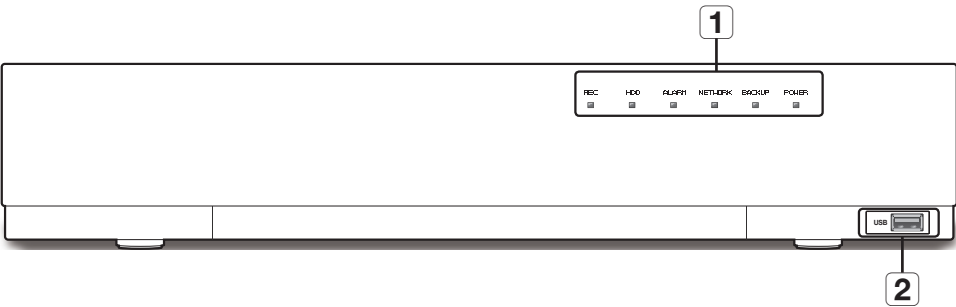
		
NVR	Mouse	Power Cable
		
Quick Manual	Terminal block	Bracket Rack
		
Bracket Fixing Screw	HDD SATA/Power cable (N/A on XRN-2011/2011A)	HDD Fixing Screw (N/A on XRN-2011/2011A)

XRN-1610/1610S/1610A/1610SA

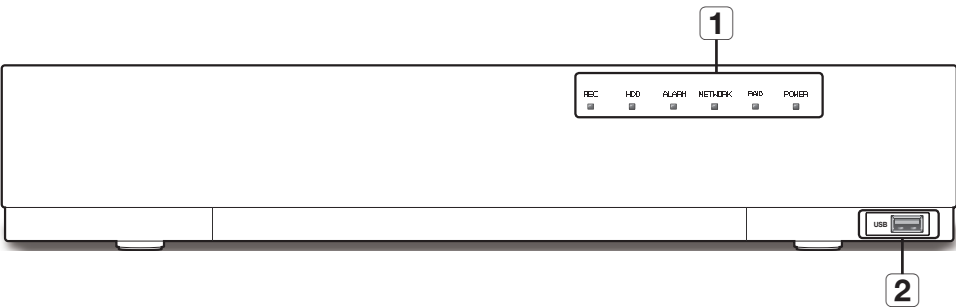
		
NVR	Mouse	
		
Power Cable	Terminal block	
		
Quick Manual	Bracket Rack	HDD Fixing Screw
		
Bracket Fixing Screw	HDD SATA/Power cable (XRN-1610/1610A)	SATA Power Cable (XRN-1610S/1610SA)
		
SATA Data Cable (XRN-1610S/1610SA)		

PART NAMES AND FUNCTIONS (FRONT)

XRN-2010/2010A/3010/3010A/1610/1610S/1610A/1610SA



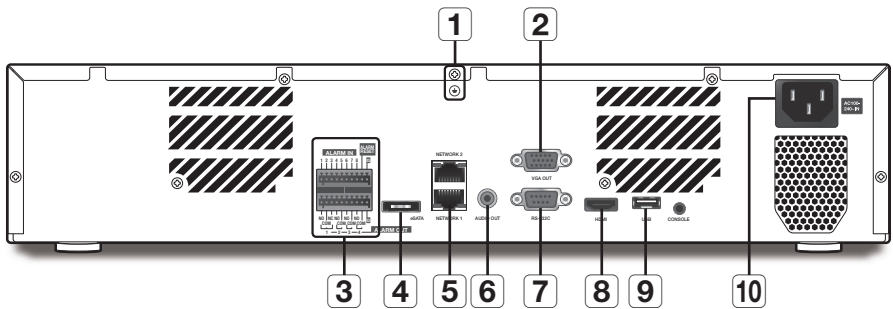
XRN-2011/2011A



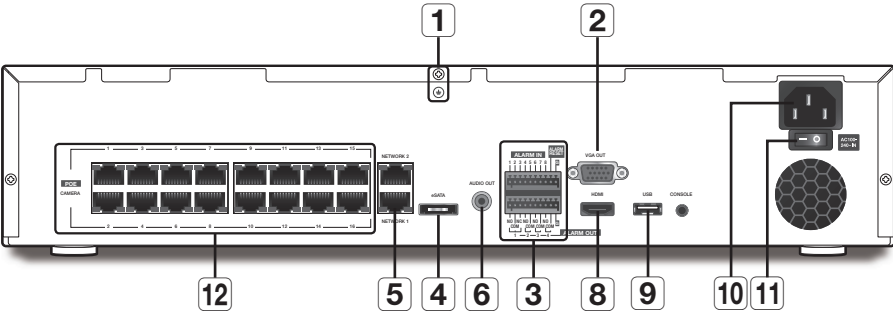
Part Names		Functions
1	LED Indicator	REC : Lights on when recording is in progress.
		HDD : Displays the normal access to HDD. LED turns on when accessing the hard disk.
		ALARM : Lights on when an event occurs.
		NETWORK : Displays both network connection and data transfer status.
		BACKUP : Stays ON when backup is in operation. (XRN-2010/2010A/3010/3010A/1610/1610S/1610A/1610SA)
		RAID : Stays ON when RAID is in use. It flickers if backup is activated when RAID is in use. Flickers only when backup is in operation if RAID is not in use. (XRN-2011/2011A)
		POWER : Shows the power ON/OFF status.
2	USB	Connects the USB devices. (USB 2.0 supported)

PART NAMES AND FUNCTIONS (REAR)

XRN-2010/2011/2010A/2011A/3010/3010A/1610/1610A



XRN-1610S/1610SA



Part Names		Functions
1	Ground connection	Terminal to connect a separate ground cable. ■ Add a ground cable to support the safe use of the device.
2	VGA OUT	VGA Video Signal Output Port.
3	ALARM	- ALARM IN : Alarm input ports. (1~8 CH) - ALARM RESET : Alarm Reset port - ALARM OUT : Alarm output ports. (1~4 CH)
4	eSATA	Terminal to connect an external storage device.
5	NETWORK1	Port recommended for camera connection, which receives an image from the camera.
6	NETWORK2	Port recommended for connection with a network, web viewer or iSCSI.
6	AUDIO OUT	Audio Signal Output Port (RCA jack).
7	RS-232C	Cable terminal for serial communication (spare).
8	HDMI	HDMI connector port.
9	USB	Connects the USB devices. (USB 3.0 supported)
10	Power	Terminal to connect power to.
11	Power Switch	Power on/off switch. (XRN-1610S/1610SA)
12	PoE (CAMERA)	Power supply port to connect to a camera. (XRN-1610S/1610SA)

■ [CONSOLE] is designed for the service repair purpose only.

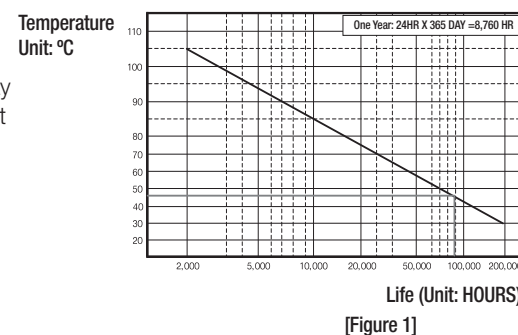
Please take note of the followings before using this product.

- Do not use the product outdoor.
- Do not spill water or liquid in the connection part of the product.
- Do not impose the system to excessive shock or force.
- Do not pull out the power plug forcefully.
- Do not disassemble the product on your own.
- Do not exceed the rated input/output range.
- Use a certified power cord only.
- For the product with an input ground, use a grounded power plug.

CHECKING THE INSTALLATION ENVIRONMENT

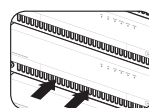
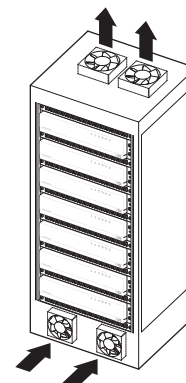
This product is a top-notch security device that is equipped with a high-capacity HDD and other key circuit boards.

Note that an excessive internal temperature of the product may cause a system failure or a shortened product life (see the right figure). Keep in mind the following instructions before installing the product.



When mounting the product on a rack, comply with the following instructions.

1. Please ensure that the rack inside is not sealed.
2. Please ensure the air is circulated through the inlet/outlet as shown in the picture.
3. If you pile up the products or other rack-mount devices as shown in figure 2, secure room for ventilation or install a vent.
4. For natural air convection, place the inlet at the bottom of the rack and the outlet on top.
5. It is strongly recommended that a fan motor is installed at the inlet and the outlet for air circulation. (Please fit a filter at the inlet to screen dust or foreign substances.)
6. Please maintain the temperature inside the rack or surrounding areas between 0°C ~ 40°C (32°F ~ 104°F) as shown in the figure 1.



[Figure 2]

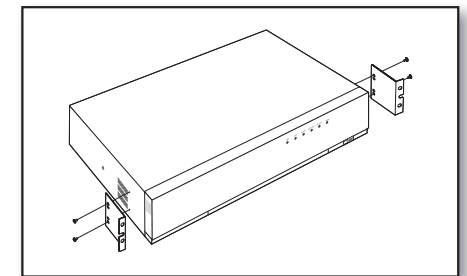
Rack Mount Instructions - The following or similar rack-mount instructions are included with the installation instructions :

- A) Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- B) Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- C) Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- D) Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- E) Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

RACK INSTALLATION

Install the Bracket-Rack as shown in the figure, and then fasten the screws on both sides.

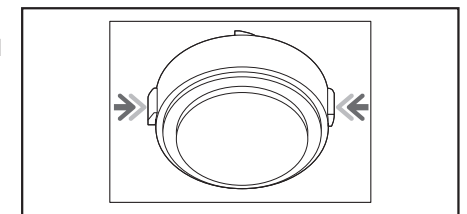
- Fix the screws not to be loosened by vibrations.



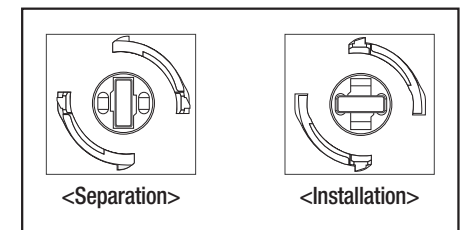
Cautions when Installing in the Rack

To install multiple NVRs in the rack, make sure to separate the FOOT at the bottom of each NVR.

1. There are four FOOTs at the bottom of a NVR.
Press the projected parts at both-ends of each "FOOT" and turn it counterclockwise.



2. "FOOT" is separated from the main body when it is turned to the end of fastening groove.



HDD ADDITION

Make sure to unplug the power cord from the wall outlet to prevent possible electric shock, injury or product damage. Please consult your provider for further information on HDD installation since improper installation or settings may damage the product.

- Number of HDDs supported : Up to 8 HDDs supported
- Make sure to unplug the power cord from the wall outlet before proceeding with the installation.



▪ Cautions for data loss (HDD care)

Please pay attention so that the data inside the HDD is not damaged.
Before adding a HDD, please check the compatibility with this product.
HDD is vulnerable to malfunction due to its sensitive nature especially against shock when operating.
Please ensure that the HDD is free from such shock.
We are not liable for any damage to the HDD incurred by user's carelessness or miss use.

▪ Cases might cause damage to HDD or recorded data

To minimize the risk of data loss from a damaged HDD, please backup data as often as possible.
If exposed to shock when disassembling or installing, data stored in the hard disk may be damaged.
A sudden power failure or turning off the product while in HDD operation may damage the hard disk drive.
HDD or files stored inside may be damaged if the main body is moved or impacted during the HDD operation.

Cautions when installing a HDD

1. Do not apply excessive force to the HDD.
2. Pay attention so as not to lose the disassembly screws or accessories.
 - If the screws or accessories are not put together correctly, the product may breakdown or not operate properly.
3. Please check the HDD compatibility before adding a HDD.
 - Please contact your nearest dealer to obtain the list of compatible devices.

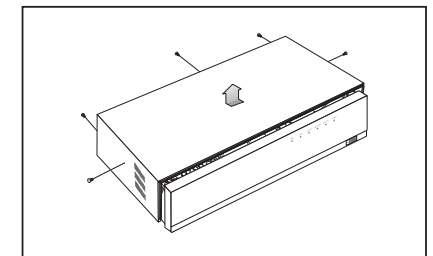
Installing the HDD



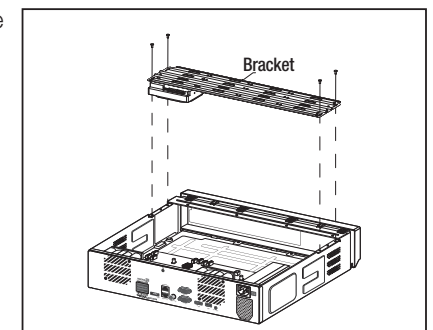
- If you are adding a new or previously used HDD to this product in addition to the HDD(s) originally installed, format the new HDD manually in the set before use.
To learn how to format, see "**Device/Format**" in the Wisenet NVR User Manual.

How to install an HDD in XRN-2010/2010A/3010/3010A/1610/1610A/1610S/1610SA

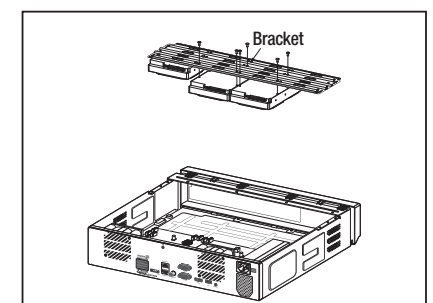
1. Remove the screws located on the left/right side and on the back side first, then remove the cover.



2. Remove the screws on the left/right side (4 screws) and remove the bracket.

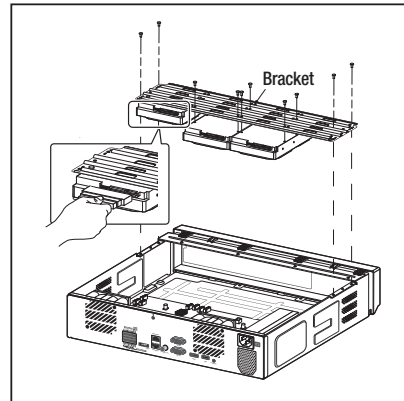


3. Mount an HDD to the bracket and fix it with screws.



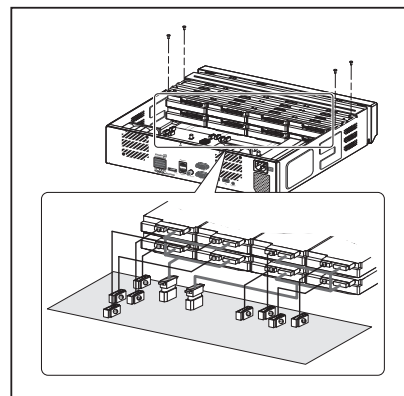
4. Connect the cable to the HDD by matching the HDD SATA/power cable number to the HDD position number on the bracket.

- For the HDD location number on the bracket, please refer to the figure below.

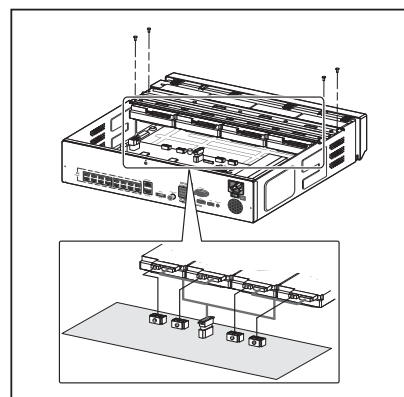


5. Mount the bracket on which an additional HDD is mounted on the NVR, secure it with screws and connect the SATA/power cable to the connector on the main board by matching the number.

- For the connector numbers, please refer to the figure below.

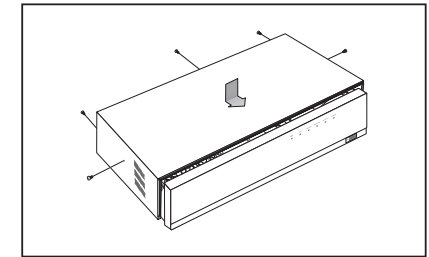


<XRN-2010/2010A/3010/3010A/1610/1610A>



<XRN-1610S/1610SA>

6. Check for any problems in the connection terminal and the wiring in the product, close the cover and fix it with screws.

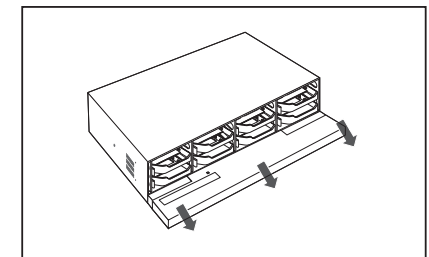


How to install an HDD in XRN-2011/2011A

1. Open the front cover and check the HDD installation bracket.



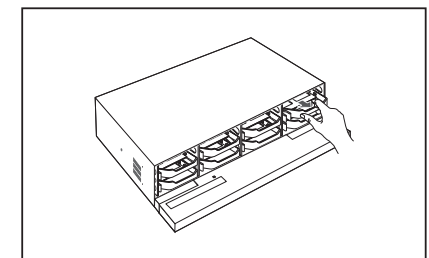
- Release the USB connection before opening the front cover to prevent damage to the USB port.



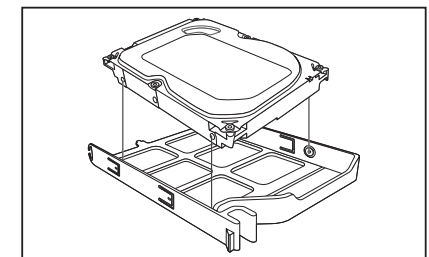
2. Push the latch to the right and remove the HDD bracket.



- Take care not to scratch your hands when removing the HDD bracket.



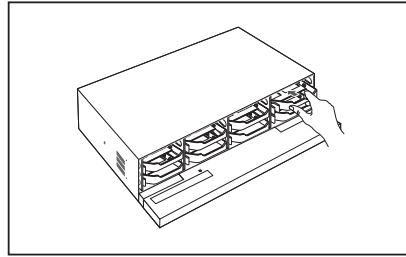
3. Align and insert HDD into the bracket home. After inserting one side, push and insert the other side slightly.



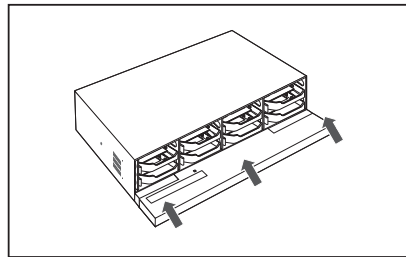
4. Align the bracket with the HDD installed with the enclosure latch, and push the bracket in the direction of the board.



- Push it until you hear the latch lock sound. If the HDD is not completely connected, it may be detected.



5. Push the front cover upwards and close it.

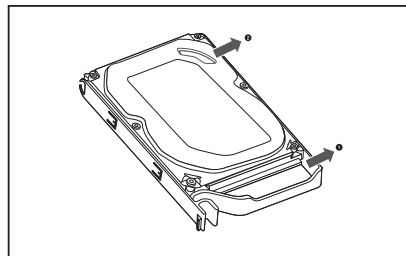


• How to exchange an installed HDD

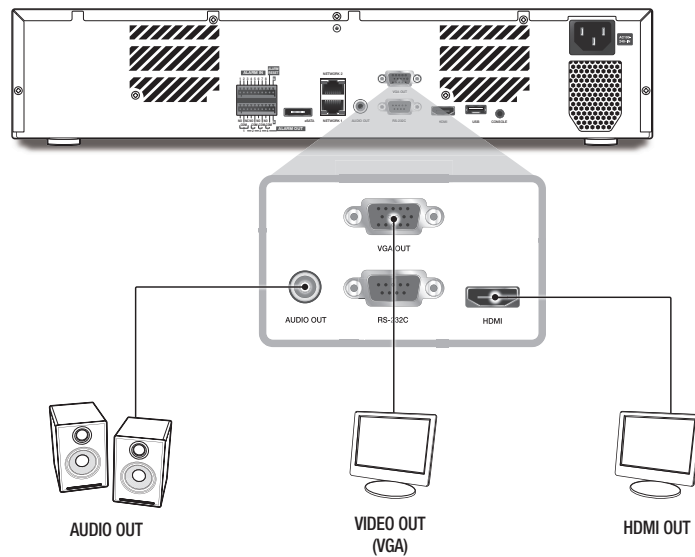
1. Open a bracket wide in the direction of the arrow and remove the holder from the HDD.
2. Open the other bracket wide and remove it from the holder.



- The procedure after HDD exchange is the same as the procedure for "Installing the HDD".



CONNECTING TO AN EXTERNAL DEVICE

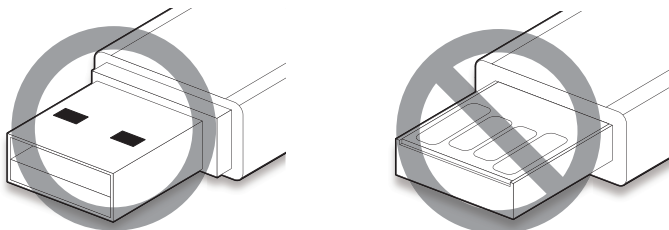


- ! Unrated or improper power source may cause damage to the system. Ensure that you use only the rated power source before pressing the POWER button.

CONNECTING THE USB

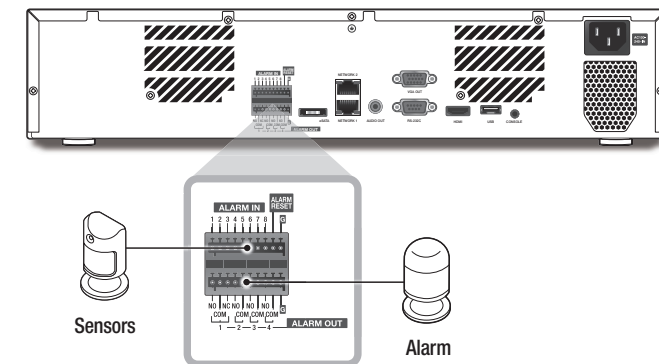
1. On the front of the product, there is a USB port.
2. You can connect a USB HDD, USB memory or mouse to the USB port.
3. If your USB HDD is connected to the system, it can be detected and set up by following the steps in "Menu > Device > Storage Device" of the Wisenet NVR User Manual.
4. The product supports hot plugging function that enables connecting/disconnecting USB devices while in operating the system.

- ! If you use the USB device for Backup purposes, format it with FAT32 on PC if it is not formatted on the NVR.
- Some USB devices may fail to function properly due to compatibility issue, please check the device before using.
- Only USB storage devices that comply with the standards (having a metal cover) are guaranteed for data transfer.
- In case if the USB device's electric contacts have been worn out, data transfer between the devices may not properly function.

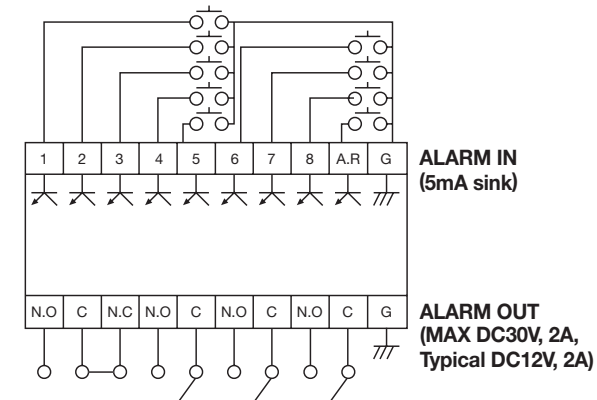


CONNECTING THE ALARM INPUT/OUTPUT

The Alarm In/Out port at the back is composed of the following.



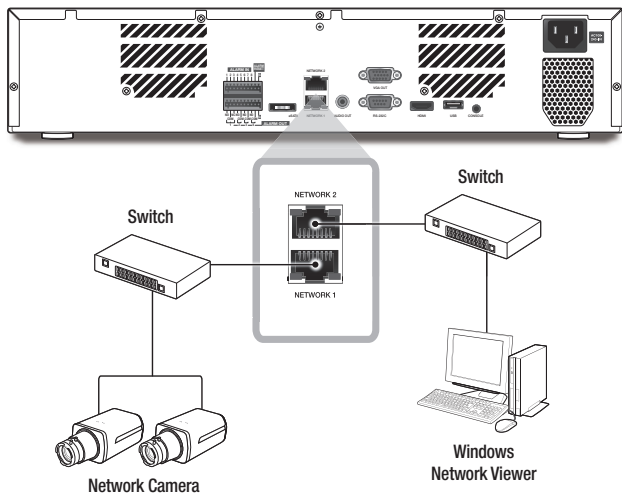
- ALARM IN 1 ~ 8 : Alarm Input Port
- ALARM RESET : On receiving an Alarm Reset signal, the system cancels the current Alarm Input and resumes sensing.
- ALARM OUT 1 ~ 4 : Alarm Output Port



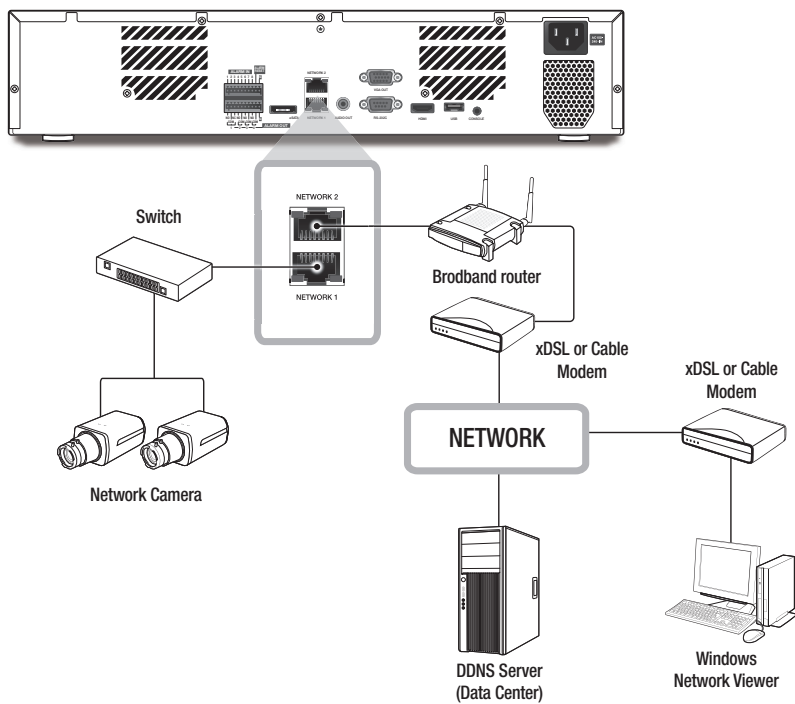
CONNECTING THE NETWORK

For more information about network connection, see "Network Configuration" in the Wisenet NVR User Manual.

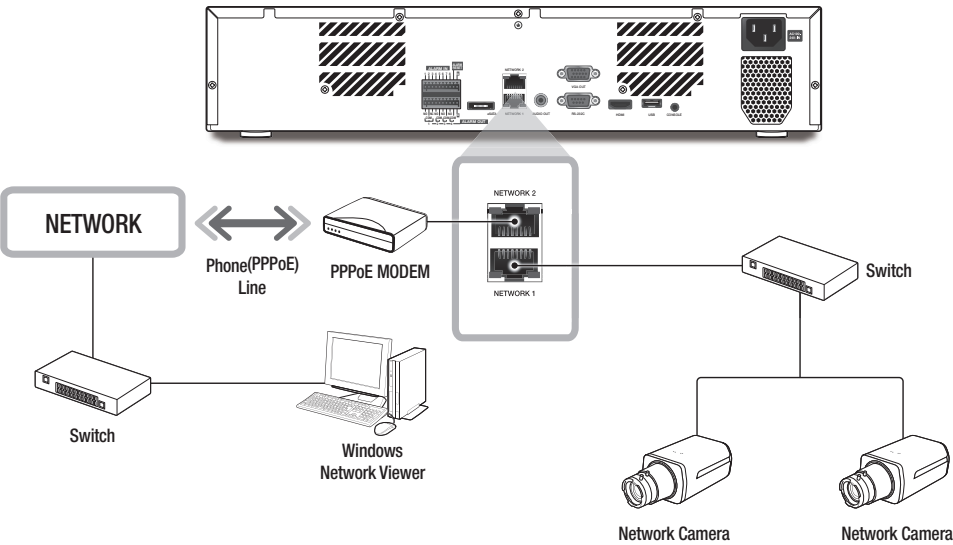
Network connection via Ethernet (10/100/1000BaseT)



Network connection via router

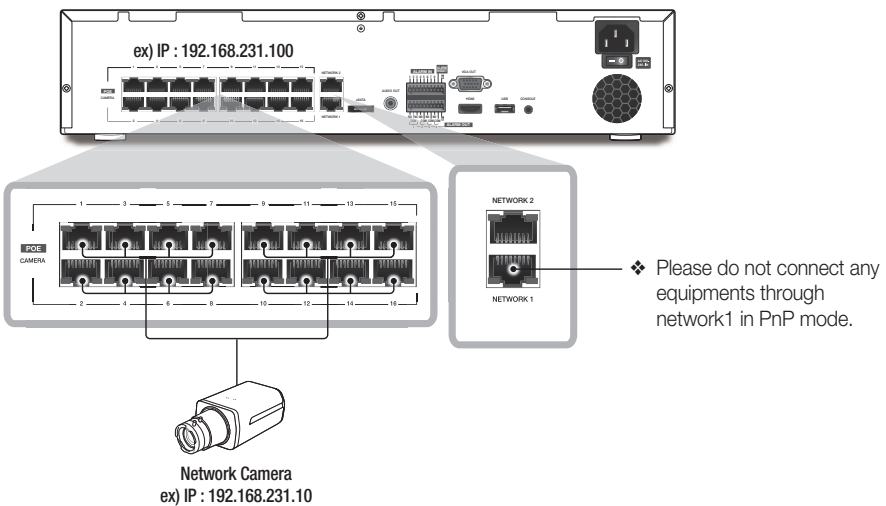


Connecting to Internet through PPPoE

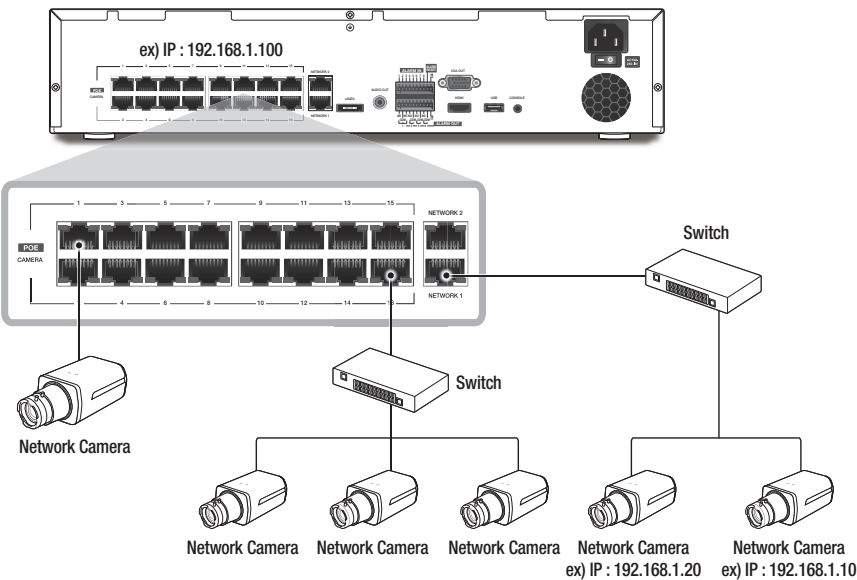


Connecting the network camera (XRN-1610S/1610SA)

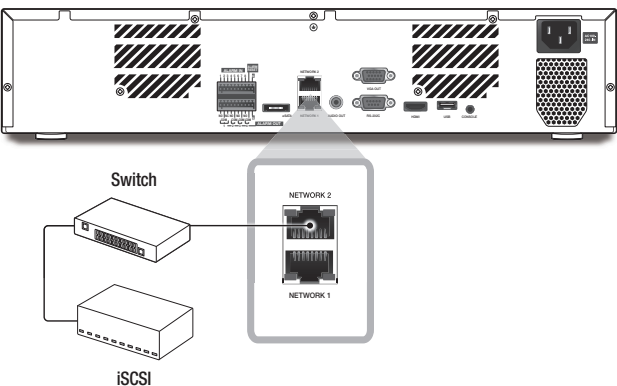
Example 1)



Example 2)

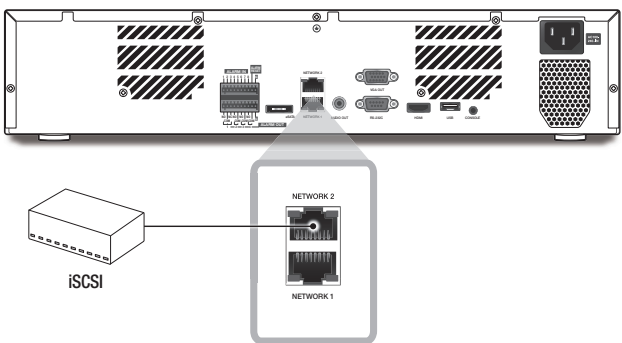


A switch can be used for connection



Connecting the iSCSI

Directly connecting to the NVR



• XRN-2010/2011/2010A/2011A

Item		Details	
		XRN-2010/2010A	XRN-2011/2011A
Display			
Network Camera	Inputs	Max. 32CH	
	Resolution	CIF ~ 12MP	
	Protocols	Wisenet, ONVIF	
Live	Local Display	1x HDMI / 1x VGA	
Performance			
Operating System	Embedded	Linux	
Record	Compression	H.265, H.264, MJPEG	
	Recording Bandwidth	Max. 256Mbps(2MP 32camera real-time recording)	Max. 100Mbps(RAID-5 Mode)
	Resolution	CIF ~ 12MP	
Search & Play	Playback Bandwidth	32Mbps(16ch simultaneously)	
	Simultaneous playback	16 channels(Local Monitor, CMS)	
	Resolution	CIF ~ 12MP	
	Playback Control	Fast/Slow Forward/Backward, Move one step up/down	
Storage	Built-In	1 EA	
	Internal HDD	8 (RAID5 : Hot Swap) - Max. 48TB(Non-RAID), Max. 36TB(RAID-5)	
	External	iSCSI storage(Max. 384TB)	
	RAID	-	RAID-5(Array Size : 4-HDD x 2 Array)
Backup	File backup (Via Web)	BU/Exe(GUI), JPG/AVI(Network)	
	Function	Max. 16CH Playback, Date-Time/Title display	

Item		Details	
		XRN-2010/2010A	XRN-2011/2011A
Sensor	I/O	8/4 (NO/NC Selectable)	
Audio	Input	32 channels (network)	
	Compression	G.711, G.726, AAC(16/48KHz)	
	Audio Communication	2-Way	
Network			
Interface		RJ-45, Gigabit Ethernet x2	
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI(Server, Client)	
DDNS		Hanwha DDNS	
Transmission Bandwidth		512Mbps(iSCSI Off), 256Mbps(iSCSI On)	
Max Remote Users		Search(3) / Live unicast(10) / Live multicast(20)	
IP Version		IPv4/v6	
Security		User access Log, IP Filtering, 802.1x, Encryption	
Language		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai	
OS		Windows 7, 8.1, 10, Mac OS X 10.9, 10.10, 10.11	
Web Browser		MS IE, Google Chrome, Mac Safari	
Viewer Software	Type	SSM, Webviewer, SmartViewer, Wisenet Mobile Viewer	
	CMS Support	SDK/CGI	
Smart phone	Support Model	Android, iOS	
	Protocol Support	RTP, RTSP, HTTP, CGI	
	Control	Live(16ch) / Playback(1ch)	
	Max. Remote Users	Search(3) / Live unicast(10)	

Item		Details	
		XRN-2010/2010A	XRN-2011/2011A
Functions			
PTZ	Control	Via GUI, Webviewer, SPC-2000	
	Preset	300 Presets	
Redundancy	Failover	32 (Normal) + 1 (Standby)	
	ARB	Yes	
System Control		Mouse, Web, SPC-2000(Controller)	
Indicator/Interface			
Front	Indicator	LED Status indicator : HDD Action(1), Alarm(1), Power(1), Record(1), Backup(1), Network(1)	LED Status indicator : HDD Action(1), Alarm(1), Power(1), Record(1), RAID(1), Network(1)
	Switch	N/A	
Connectors	VGA	1 EA (Up to 16 split screen mode Live Support)	
	HDMI	1 EA (Live/PB/Setup support) - Max. 4K support (3840 x 2160)	
	Audio	Out(1EA, RCA, Line)	
	Ethernet	RJ-45 2EA (LAN/WAN, 1Gbps)	
	Alarm	1) In(8EA, Terminal Block) 2) Alarm Reset(1EA) 3) Out (4EA, Terminal Block) - Relay Out1(NO/NC/COM) - Relay Out2~4(NO/COM)	
	USB	2EA(Front 1, Rear 1(USB3.0))	
	Storage	1 e-SATA	
	Serial	RS-232C	
	Reset	-	
	Power Cord	1EA AC Inlet	

Item		Details	
		XRN-2010/2010A	XRN-2011/2011A
System			
Log	Log List	Max. 20000 (System Log, Event Log each)	
Environmental			
Operating Temperature / Humidity		+0°C to +40°C (+32°F to +104°F)	
Humidity		20% ~ 85% RH	
Electrical			
Power		100 to 240 VAC ±10%; 50/60 Hz, 4~1.5A	
Power Consumption		99W (6TB HDD x 8ea)	
Mechanical			
Color / Material		Black / Metal	
Dimension (WxHxD)		440x88x384.8 (17.32" x 3.46" x 15.15") (2U)	
Weight		4.86 kg (Based on no HDD)	5.43 kg (Based on no HDD)
Standards			
Approvals		UL, FCC, KC, CB, CE-EMC, CCC, EAC, PSE	

Recording performance spec for the HDD condition

No	HDD condition	Receiving (Mbps)	Recording (Mbps)	
			Internal	iSCSI
1	HDD for CE / Non RAID	256	256	-
2	HDD for CE / RAID 5	100	100	-
3	HDD for Server / Non RAID	256	256	256
4	HDD for Server / RAID 5	100	100	100

• XRN-3010/3010A

Item		Details
Display		
Network Camera	Inputs	Max. 64CH
	Resolution	CIF ~ 12MP
	Protocols	Wisenet, ONVIF
Live	Local Display	1x HDMI / 1x VGA Dual Monitor
	Performance	[Local Monitor] - 12M (30fps) - 8.3M(120fps) - 1080p(480fps) - 720P(960fps) - D1(1560fps)
Performance		
Operating System	Embedded	Linux
Record	Compression	H.265, H.264, MJPEG, WiseStream(H.265, H.264)
	Recording Bandwidth	Max. 300Mbps
	Resolution	CIF ~ 12MP
Search & Play	Playback Bandwidth	32Mbps(16ch simultaneously)
	User	Max. 4 Users (Local 1, Remote 3)
	Simultaneous playback	Max. 16 channels(Local Monitor, CMS)
	Resolution	CIF ~ 12MP
	Fisheye Dewarping	Web / CMS
	Playback Control	Fast/Slow Forward/Backward, Move one step up/down
Storage	Built-In	0TB ~ 8TB
	Internal HDD	8 (Max. 64TB)
	External	-

Item		Details
Backup	File backup (Via Web)	BU/Exe(GUI), JPG/AVI(Network)
	Function	Multi channel(Upto 16CH) Play, Date-Time/Title display
Sensor	I/O	8/4 (NO/NC Selectable)
Audio	Input	64 channels (network)
	Compression	G.711, G.726, AAC(16/48KHz)
	Audio Communication	2-Way
Network		
Interface		RJ-45, Gigabit Ethernet x2
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI(Server, Client)
DDNS		Hanwha DDNS
Transmission Bandwidth		XRN-3010 : 512Mbps XRN-3010A : 512Mbps(P2P Off), 256Mbps(P2P On)
Max Remote Users		Search(3) / Live unicast(10) / Multicast(20)
IP Version		IPv4/v6
Security		User access Log, IP Filtering, 802.1x, Encryption
Language		English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai
OS		Window 7, 8, 10, Mac OS X(10.8 or above)
Web Browser		MS IE, Google Chrome, Mac Safari
Viewer Software	Type	SSM, Webviewer, SmartViewer, Wisenet Mobile Viewer
	CMS Support	SDK/CGI (SUNAPI)
Functions		
PTZ	Control	Via GUI, Webviewer, SPC-2000
	Preset	300 Presets

Item		Details
Smart phone	Support Model	Android, iOS
	Protocol Support	RTP, RTSP, HTTP, CGI(SUNAPI)
	Control	Live(16ch) : Multi-Profile Support Playback(1ch)
	Max. Remote Users	Search(3) / Live unicast(10) / Multicast(20)
Redundancy	Failover	N+1 (Include Fail-Back)
	ARB	Yes
System Control		Mouse, Web, SPC-2000(Controller)
Indicator/Interface		
Front	Indicator	LED Status indicator (6EA) : HDD Action(1), Alarm(1), Power(1), Record(1), Backup(1), Network(1)
Connectors	VGA	Sub : 1 EA (Support Live screen upto 16 div. mode)
	HDMI	Main : 1 EA (Both Support Live / PB / Setup) - Support upto 4K (3840 x 2160, Single Monitor Mode)
	Audio	Out(1EA, RCA, Line)
	Ethernet	RJ-45 2EA (LAN/WAN, 1Gbps)
	Alarm	1) In(8EA, Terminal Block) 2) Alarm Reset(1EA) 3) Out (4EA, Terminal Block) - Relay Out1(NO/NC/COM) - Relay Out2~4(NO/COM)
	USB	2EA(Front 1, Rear 1)
	Storage	1 e-SATA
	Serial	RS-232C
	Reset	Switch(1EA)
	Power Cord	1EA AC Inlet

Item		Details
System		
Log	Log List	Max. 20000 (System Log, Event Log each)
Environmental		
Operating Temperature / Humidity		+0°C to +40°C (+32°F to +104°F)
Humidity		20% ~ 85% RH
Electrical		
Power		100 to 240 VAC ±10%; 50/60 Hz, 4~1.5A
Power Consumption		Max. 99W (338BTU, 6TB HDD x 8ea)
Mechanical		
Color / Material		Black / Metal
Dimension (WxHxD)		W440xH88xD384.8 (17.32" x 3.46" x 15.15") (2U)
Weight		4.86Kg (10.71 lb, HDD not included)

Recording performance spec for the HDD condition

Mode	HDD condition	Recording
		Internal
General mode	-	150
Distributed mode	1 HDD	150
	2 or more HDDs	300

• XRN-1610/1610S/1610A/1610SA

Item		Details	
		XRN-1610/1610A	XRN-1610S/1610SA
Display			
Network Camera	Inputs	Max. 16CH	
	Resolution	CIF ~ 12MP	
	Protocols	Wisenet, ONVIF	
Live	Local Display	1x HDMI / 1x VGA Dual Monitor	
	Performance	[Local Monitor] 12MP (30fps) 8MP(120fps) 5MP(180fps), 3MP(240fps), 2MP(480fps), 720p(480fps), D1(480fps) [Web] 5MP(30fps), 3MP(60fps), 2MP(120fps), 720p(240fps), D1(480fps)	
Performance			
Operating System	Embedded	Linux	
Record	Compression	H.265, H.264, MJPEG, WISESTREAM(H.265, H.264)	
	Recording Bandwidth	180Mbps	
	Resolution	CIF ~ 12MP	
Search & Play	Playback Bandwidth	32Mbps (16ch simultaneously)	
	Performance	Max. 4 Users (Local 1, Remote 3)	
	Simultaneous playback	Up to 16CH (Local, Network)	
	Resolution	CIF ~ 12MP	
	Fish-Eye Dewarping	processed on Web / CMS	
	Playback Control	Fast/Slow Forward/Backward, Move one step up/down	
Storage	Default Built-In	0TB ~ 6TB	
	Internal	8 SATA (Max. 48TB)	4 SATA (Max. 24TB)
	External	1 e-SATA, iSCSI (Max. 384TB)	
Backup	File backup	BU/EXE(GUI), JPG/AVI(Network)	
	Function	Max. 16CH Play, Date-Time/Title display	

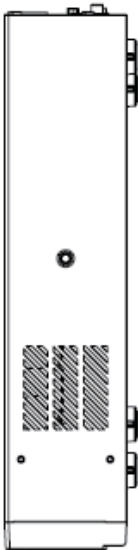
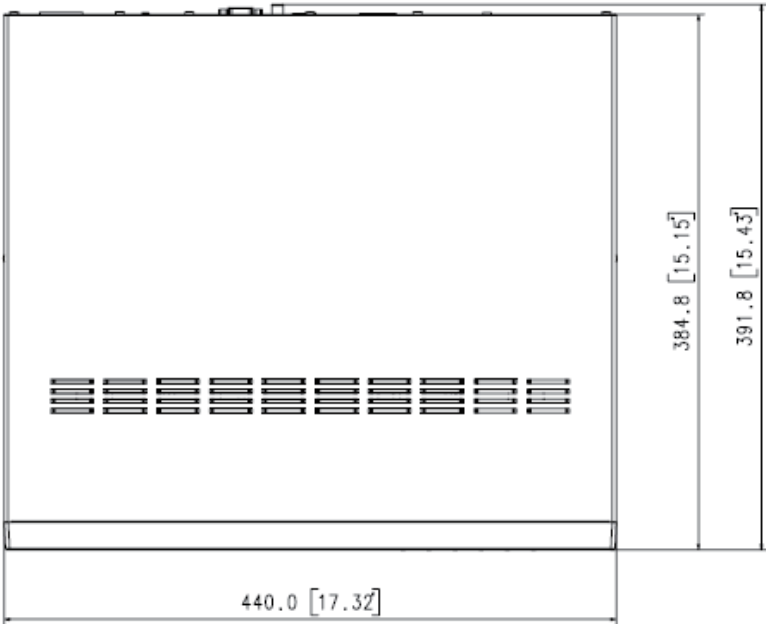
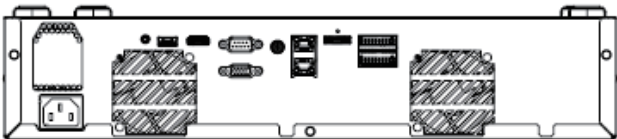
Item		Details	
		XRN-1610/1610A	XRN-1610S/1610SA
Sensor	I/O	8/4 (NO/NC selectable)	
Audio	Input	16CH (network)	
	Compression	G.711, G.726, AAC(16/48KHz)	
	Audio Communication	2-Way (pass-through between camera and SSM)	
Network			
Protocol		TCP/IP, UDP/IP, RTP (UDP), RTP (TCP), RTSP, NTP, HTTP, DHCP (Server, Client), PPPoE, SMTP, ICMP, IGMP, ARP, DNS, DDNS, uPnP, HTTPS, SNMP, ONVIF (Profile-S), SUNAPI(Server, Client)	
DDNS		Hanwha DDNS	
Transmission Bandwidth		Max. 256Mbps (iSCSI off) Max. 128Mbps (iSCS on)	
Max Remote Users		Search(3) / Live unicast(10) / Live multicast(20)	
IP Version		IPv4/v6	
Security		User access Log, IP Filtering, 802.1x, Encryption (ID/PW, Recording, Transmission, Backup)	
Language	GUI	English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese, Thai	
	Web	English, French, German, Italian, Spanish, Russian, Turkish, Polish, Dutch, Swedish, Czech, Portuguese, Danish, Rumanian, Serbian, Croatian, Hungarian, Greek, Norwegian, Finnish, Korean, Chinese, Japanese	
OS		Windows XP(service pack 2 or above), Vista, 7, 8, 10, Mac OS X(10.7 or above)	
Web Browser		Plug-in free web viewer Supported Browser: Google Chrome 47, MS Edge 20 WMF : 1CH LIVE(800X600), SETUP Plug-in Webviewer Supported MS Explore 11, Mozilla Firefox 43, Apple Safari 9 * Mac OS X only	
Viewer Software	Type	SSM, Webviewer, SmartViewer, Wisenet Mobile	
	CMS Support	SDK/CGI (SUNAPI)	

Item		Details	
		XRN-1610/1610A	XRN-1610S/1610SA
Smart phone	Support Model	Android, iOS	
	Protocol Support	RTP, RTSP, HTTP, CGI (SUNAPI)	
	Control	Live(16ch) : Multi-Profile Support Playback(1ch, Max 2MP)	
	Max. Remote Users	Search (3), Live Unicast (10), Multicast (20)	
Functions			
Camera Control	PoE(PoE+)	-	1) Monitor PoE(PoE+) Power consumption 2) On/Off Control for each PoE(PoE+) camera 3) Remote Reset for each PoE(PoE+) camera
	Time Sync.	-	NVR Time Protocol for PoE(PoE+) Camera (Time sync based on NVR time)
Easy Configuration		Setup Wizard (Language, Date/Time, Network, Auto Camera Configuration)	Setup Wizard (Language, Date/Time, Network, Auto Camera Configuration) ※ selectable between PnP and Manual mode
ARB (Auto Recovery Backup)		Yes	
PTZ	Control	Via GUI, Webviewer, SPC-2000(USB)	
	Preset	300	
System Control	Control Applications	Mouse, Web, IR Remocon, SPC-2000(USB)	
Indicator/Interface			
Front	Indicator	Power Status LED 1EA HDD Action LED 1EA Alarm Status LED 1EA Record Status LED 1EA Network Action LED 1EA Backup LED 1EA	
Connectors	VGA	Sub : 1 EA (Support Live screen upto 16 div. mode)	
	HDMI	Main : 1 EA (Both Support Live / PB / Setup) - Support upto 4K (3840 x 2160, Single Monitor Mode)	

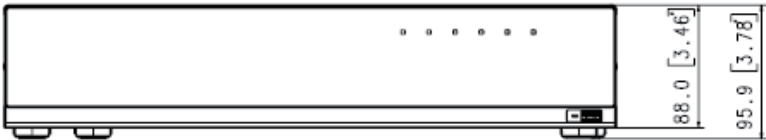
Item		Details	
		XRN-1610/1610A	XRN-1610S/1610SA
Connectors	Audio	Out(1EA, RCA, Line)	
	Ethernet	2EA (LAN/WAN, 1Gbps) - LAN : Downlink to Camera/ PoE(PoE+) Hub - WAN : Uplink to CMS	16EA (PoE(PoE+), 100Mbps) 2EA (LAN/WAN, 1Gbps) - LAN : Downlink to Camera/ PoE(PoE+) Hub - WAN : Uplink to CMS
	Alarm	In(8EA, Terminal Block) Out(4EA, Terminal Block)	
	USB	2EA (Front 1EA, Rear 1EA)	
	Storage	-	
	Serial	1ea for RS-232C (Plan to support as project basis)	-
	Reset	Yes (Factory Reset, Alarm Reset)	
	Power Cord	Included	
System			
Log	Log List	Max. 20000 (System Log, Event Log each)	
Environmental			
Operating Temperature / Humidity		+0°C to +40°C (+32°F to +104°F)	
Humidity		20% ~ 85% RH	
Electrical			
Power Input		100 ~ 240V AC	
Power Consumption		Max. 76.3 W (8 HDDs)	Max. 271.9 W (4 HDDs, PoE(PoE+) on), Max. 51.9 W (4 HDDs, PoE(PoE+) off) ※ PoE(PoE+) Budget : Max. 200W
Mechanical			
Color / Material		Black / Metal	
Dimension (WxHxD)		440.0 x 88.0 x 384.8mm (17.32" x 3.46" x 15.15") (2U)	
Weight		5.44Kg	5.1Kg

• XRN-2010/2011/2010A/2011A

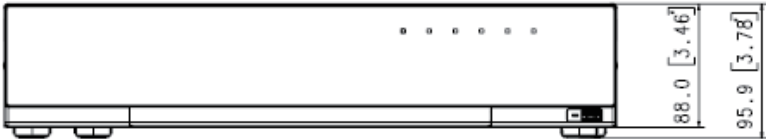
unit : mm (inches)



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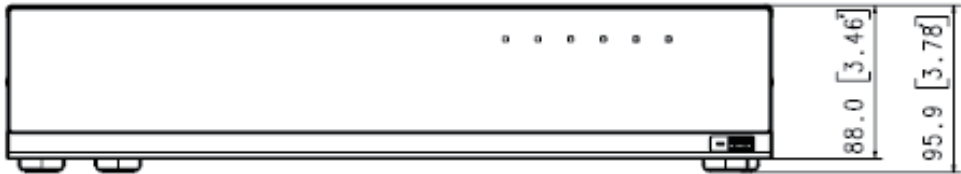
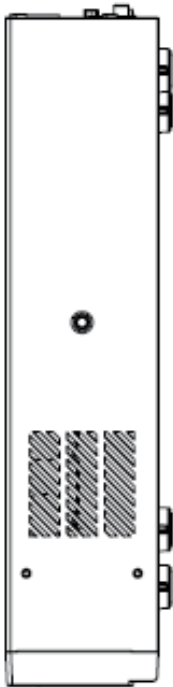
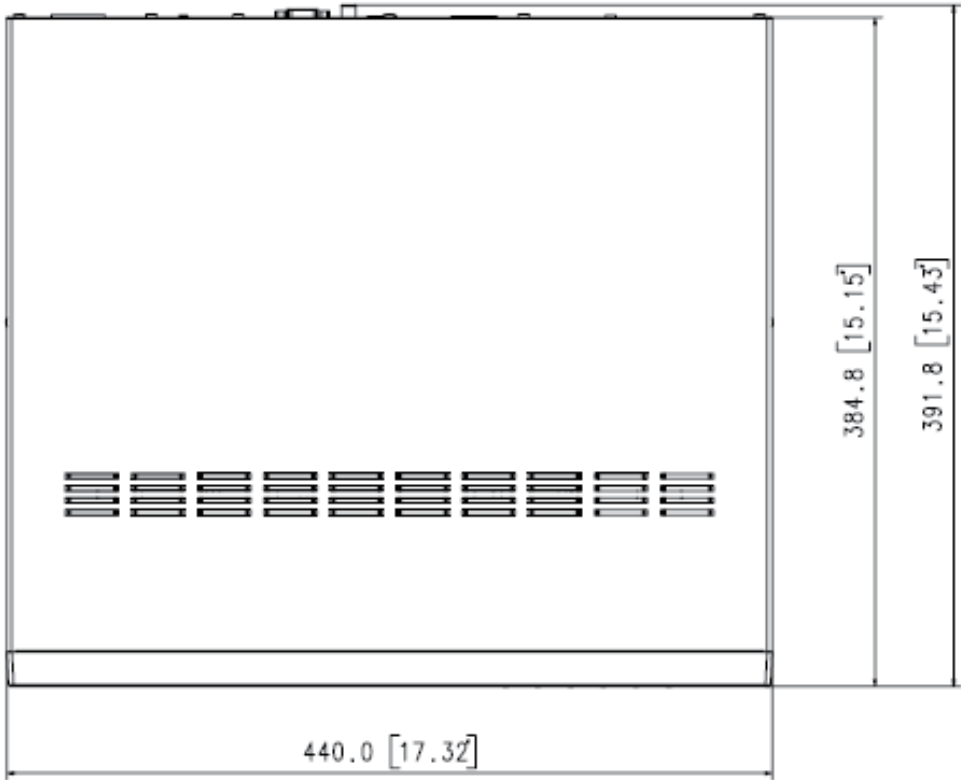
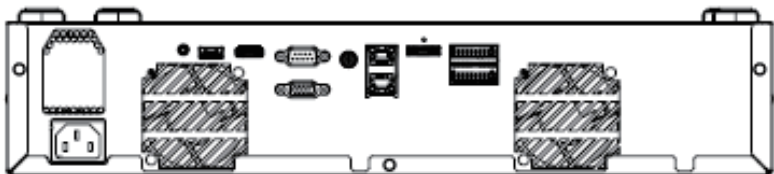


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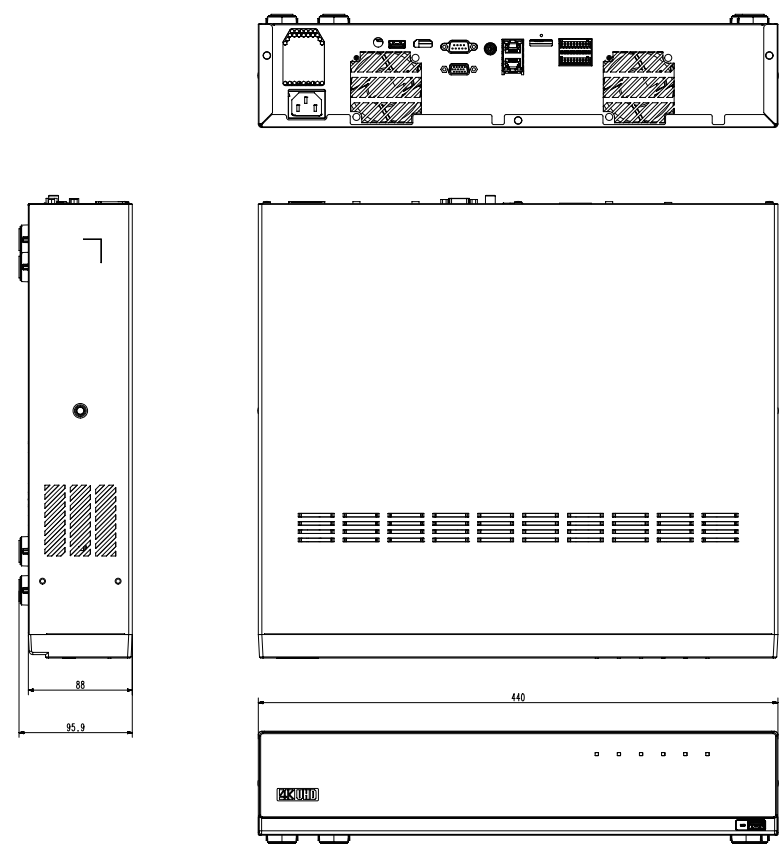
• XRN-3010/3010A

unit : mm (inches)



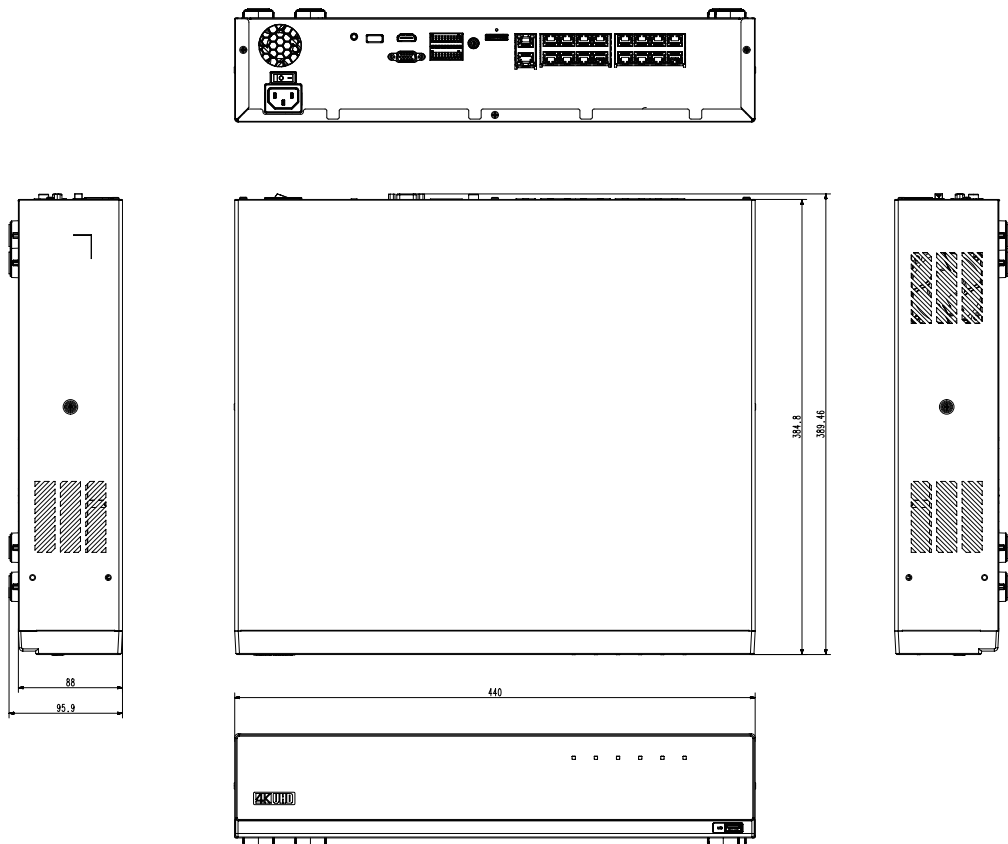
• XRN-1610/1610A

unit : mm (inches)



• XRN-1610S/1610SA

unit : mm (inches)



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[sheepb.jpg] "Clone me," says Dolly sheepishly

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2. [2]Bernd Altmeyer <altmeier@atlsoft.de> hopf Elektronik serial line and PCI-bus devices

3. [3]Viraj Bais <vbais@mailman1.intel.com> and [4]Clayton Kirkwood <kirkwood@striderfm.intel.com> port to WindowsNT 3.5

4. [5]Michael Barone <michael.barone@lmco.com> GPSVME fixes

5. [6]Karl Berry <karl@owl.HQ.ileaf.com> syslog to file option

6. [7]Greg Brackley <greg.brackley@bigfoot.com> Major rework of WINNT port. Clean up recvbuf and iosignal code into separate modules.

7. [8]Marc Brett <Marc.Brett@westgeo.com> Magnavox GPS clock driver

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11. [12]Casey Crellin <casey@csc.co.za> vxWorks (Tornado) port and help with target configuration

12. [13]Sven Dietrich <sven_dietrich@trimble.com> Palisade reference clock driver, NT adj. residuals, integrated Greg's Winnt port.

13. [14]John A. Dundas III <dundas@salt.jpl.nasa.gov> Apple A/UX port

14. [15]Torsten Duwe <duwe@immd4.informatik.uni-erlangen.de> Linux port

15. [16]Dennis Ferguson <dennis@mrbill.canet.ca> foundation code for NTP Version 2 as specified in RFC-1119

16. [17]Glenn Hollinger <glenn@herald.usask.ca> GOES clock driver

17. [18]Mike Iglesias <iglesias@uci.edu> DEC Alpha port

18. [19]Jim Jagielski <jim@jagubox.gsfc.nasa.gov> A/UX port

19. [20]Jeff Johnson <jbj@chatham.usdesign.com> massive prototyping overhaul

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21. [23]Poul-Henning Kamp <phk@FreeBSD.ORG> Oncore driver (Original author)

22. [24]Frank Kardel [25]<Frank.Kardel@informatik.uni-erlangen.de> PARSE <GENERIC> driver (14 reference clocks), STREAMS modules for PARSE, support scripts, syslog cleanup

23. [26]William L. Jones <jones@hermes.chpc.utexas.edu> RS/6000 AIX modifications, HPUX modifications

24. [27]Dave Katz <dkatz@cisco.com> RS/6000 AIX port

25. [28]Craig Leres <leres@ee.lbl.gov> 4.4BSD port, ppsclock, Magnavox GPS clock driver

26. [29]George Lindholm <lindholm@ucs.ubc.ca> SunOS 5.1 port

27. [30]Louis A. Mamakas <louie@ni.umd.edu> MD5-based authentication

28. [31]Lars H. Mathiesen <thorinn@diku.dk> adaptation of foundation code for Version 3 as specified in RFC-1305

29. [32]David L. Mills <mills@udel.edu> Version 4 foundation: clock discipline, authentication, precision kernel; clock drivers: Spectracom, Austron, Arbiter, Heath, ATOM, ACTS, KSI/Odetics; audio clock drivers: CHU, WWW/H, IRIG

30. [33]Wolfgang Moeller <moeller@gwdgv1.dnet.gwdg.de> VMS port

31. [34]Jeffrey Mogul <mogul@pa.dec.com> ntptrace utility

32. [35]Tom Moore <tmoore@fiemel.daytonoh.ncr.com> i386 svr4 port

33. [36]Kamal A Mostafa <kamal@whence.com> SCO OpenServer port

34. [37]Derek Mulcahy <derek@toybox.demon.co.uk> and [38]Damon Hart-Davis <d@hd.org> ARCRON MSF clock driver

35. [39]Rainer Pruy <Rainer.Pruy@informatik.uni-erlangen.de> monitoring/trap scripts, statistics file handling

36. [40]Dirce Richards <dirce@zk3.dec.com> Digital UNIX V4.0 port

37. [41]Wilfredo Sánchez <wsanchez@apple.com> added support for NetInfo

38. [42]Nick Sayer <mrapple@quack.kfu.com> SunOS streams modules

39. [43]Jack Sasportas <jack@innovativeinternet.com> Saved a Lot of space on the stuff in the html/pic/ subdirectory

40. [44]Ray Schnitzler <schnitz@unipress.com> Unixware1 port

41. [45]Michael Shields <shields@tembel.org> USNO clock driver

42. [46]Jeff Steinman <jss@pebbles.jpl.nasa.gov> Datum PTS clock driver

43. [47]Harlan Stenn <harlan@pfcs.com> GNU automake/autoconfigure makeover, various other bits (see the ChangeLog)

44. [48]Kenneth Stone <ken@sdd.hp.com> HP-UX port

45. [49]Ajit Thyagarajan <ajit@ee.udel.edu> IP multicast/anycast support

46. [50]Tomoaki TSURUOKA <tsuruoka@nc.fukuoka-u.ac.jp> TRAK clock driver

47. [51]Paul A Vixie <vixie@vix.com> TrueTime GPS driver, generic TrueTime clock driver

48. [52]Ulrich Windl <Ulrich.Windl@rz.uni-regensburg.de> corrected and validated HTML documents according to the HTML DTD

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