

WISeNeT

NETWORK STORAGE

User Manual

SRB-160S



NETWORK STORAGE

User Manual

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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.



Battery

Batteries(battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

Caution

Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions.

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 installing additional HDD to this product, check if it is compatible with the product.

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FEATURES

- Large capacity network storage
- Compatible NVR : SSM-RS, PRN-4011, XRN-1610/1610S, XRN-2010/2011
- Throughput

Classification	Performance		
Enterprise HDD	Group 1	400Mbps	800Mbps
	Group 2	400Mbps	
Surveillance HDD	Group 1	300Mbps	600Mbps
	Group 2	300Mbps	

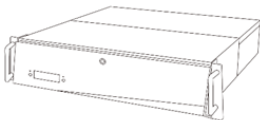
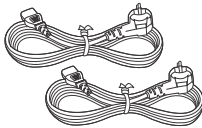
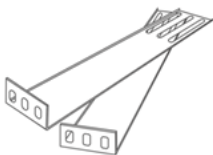
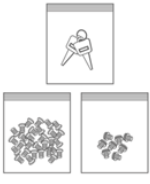
※ Use only enterprise HDDs for SSM-RS.

- 16 Hot-swappable HDD (Max. 128TB with 8TB HDDs)
- RAID Mode : 0/10/5/6, RAID5+Hotstandby
- ONE-TOUCH settings : Create a RAID volume and an iSCSI target by pushing the one-touch button.
- Up to 8 virtual storage volumes can be set, and NVR can be allocated for each volume.
(A single storage can be shareable by up to eight NVRs.)
- Network Bonding: Network fail-over, load balancing and link-aggregation
- Remote management with a web viewer and a client application.
- 4 Giga-bit network ports
- 3U Rackmount, Front cover with a key lock
- Redundant power supply

Package Contents

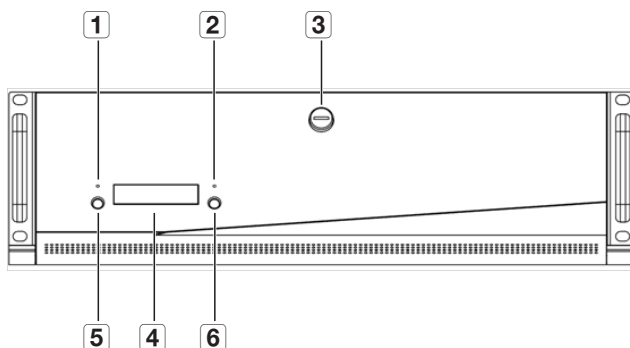
Please unwrap the product, and place the product on a flat place or in the place to be installed.
Please check the following contents are included in addition to the main unit.

- 
- The appearance of the components may differ from the image shown.
 - Accessory category and quantity may differ depending on sales region.

		
Main Frame	Network Cable	Power Cable
		
Rack Mount Kit	HDD door lock key / HDD Screws (1 bag) / Rack Mount Screws (1 bag)	User Manual / Remote Manager software

PART NAMES AND FUNCTIONS (FRONT)

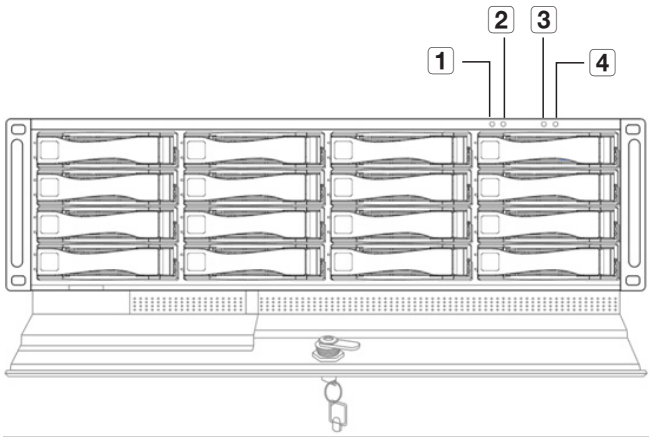
Front I



Part Names		Functions
1	ERROR LED (Red)	Lights on when an error occurs.
2	Network LED (White)	Lights on when RAID rebuilding is in progress or the data is transferring.
3	Door-Lock Key	Locks or unlocks the door of the front panel with using the enclosed door-lock key.
4	Front LCD	Displays the status of the device.
5	Button 1	It's used when the ONE-TOUCH Button is performed and when the power off is performed. (Please refer to the ONE-TOUCH BUTTON SETUP section. (pages 39~40))
6	Button 2	It's used when the status displayed on the front LCD is changed and when the ONE-TOUCH Button setup and the power off are canceled.

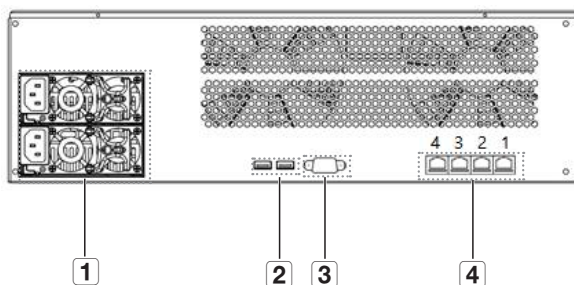
overview

Front II



Part Names		Functions
1	Mute LED (Red)	Lights on when the mute function is operated.
2	Mute Switch	This switch can be used to mute the beep that is sounded when a problem occurs from the device. Press and hold it for 1 or 2 seconds, and then a red LED will turn on to notify you that the device is muted.
3	Power LED (Blue)	Lights on when the system turns on.
4	Power Switch	Turns on or off the system. - Press the power switch at least 2 seconds to turn on the system. - To turn off the system, press the power switch at least 2 seconds and press the Button 1 located at Front I. (Please refer to the Part Names and Functions (Front I). page 9)

PART NAMES AND FUNCTIONS (REAR)



Part Names		Functions
1	Power Supply	Outputs Max. 300W (Redundant)
2	USB port	Connects the USB devices.
3	Console port	Used for the system setting in the factory.
4	Network port	Port 1: Connects the device with a network switch for data transferring. Port 2,3,4: Connects the device with a network switch together the Port 1 for Network Bonding.

installation

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.
- Mount at least 1 internal HDD in the NVR to connect, and then connect this product.
- It is recommended to install a rack to ensure stable operation. At this time, the rack must be installed on the shelf or be fixed with a rack mounting kit.

INSTALLING HDD

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.

- 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.

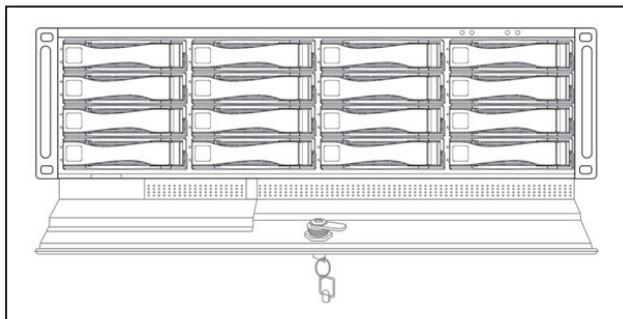
If exposed to shock when disassembling or installing, data stored in the hard disk may be damaged.

A sudden power failure or turning off the product while in HDD operation may damage the hard disk drive.

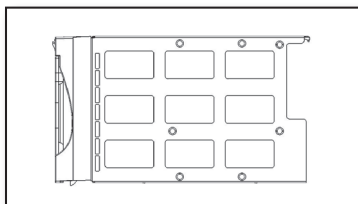
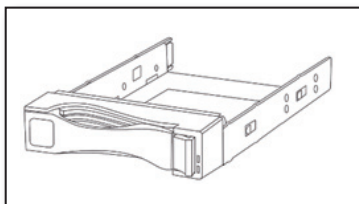
HDD or files stored inside may be damaged if the main body is moved or impacted during the HDD operation.

Install the SATA HDD (maximum 16) following the instruction.

1. Open the door of the front.
2. Open the door of the front panel by using the enclosed door-lock key.

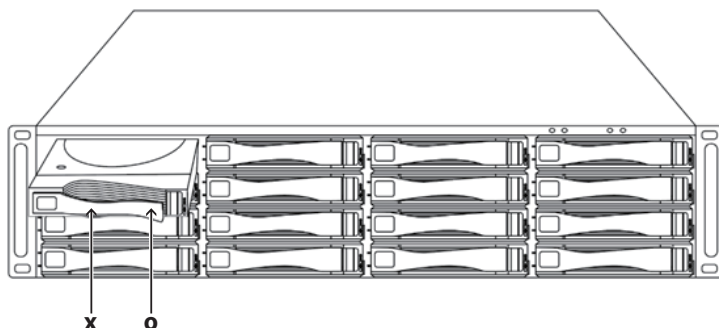


3. Remove the 16 hot-swap drive bays by pulling the handles toward you.
4. Secure 16 SATA HDD to the hot-swap drive bays using the enclosed screws.



5. Insert the hot-swap drive bay into the back of the main frame.
6. Gently push the drive bay until it reaches the end of the main frame, and then secure it to the frame using the handle.
7. Repeat the procedure to insert SATA HDD to the other 15 hot-swap drive bays.

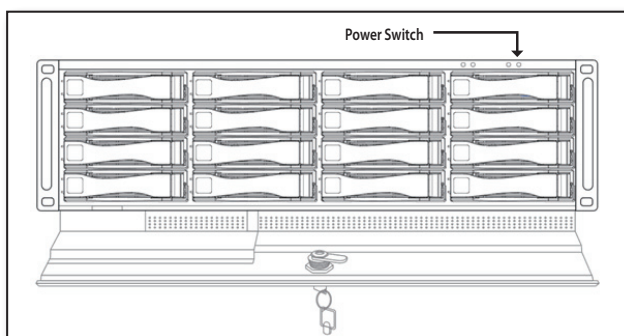
installation



- The HDDs to be installed should be the same model and capacity.
- When you insert a hot-swap drive bay, push the end of the drive handle.

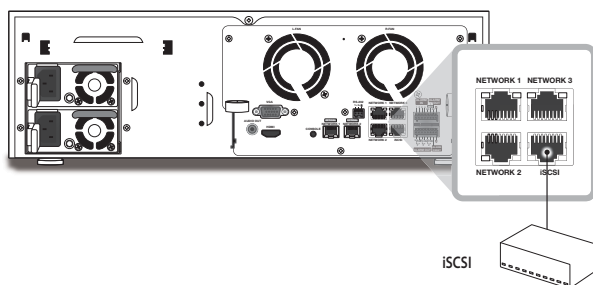
TURN ON THE SYSTEM

1. Connect the power cable of the device to the wall outlet.
2. Connect the network cable to the Network Port 1 on the rear panel of the device and the network port of the gigabit switch.
3. Press the power switch on the front panel for at least 2 seconds.
4. If the device is turned on, it activates a beeping sound and the system booting will be started.

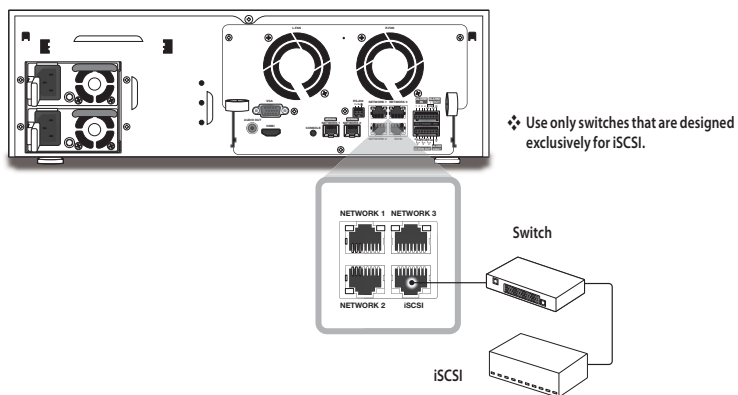


CONNECTING THE iSCSI

Directly connecting to the NVR

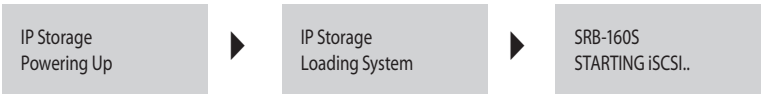


A switch can be used for connection



STARTING THE SYSTEM

When booting the system, the below messages is displayed in order.



When the device is fully booted, the following information will be displayed on the front LCD through button operation. You can configure the device settings through the REMOTE MANAGER (refer to the REMOTE MANAGER program on page 31).

LCD Information	LCD Display	Details
RAID Status	▪ If RAID is not configured RAID GROUP1 NO INFORMATION ▪ If RAID is rebuilding RAID GROUP1 R5 REBUILD 88% ▪ If RAID configuration is completed RAID GROUP1 RAID5 OK	Displays the RAID Level and the RAID Status. (Please refer to the Trouble Shooting section for the details. (page 45))
HDD Status	▪ If HDDs is not secured RAID GROUP1 HDD1-8 :XXXXXXXX ▪ If HDDs is secured andnot used in RAID volumes RAID GROUP1 HDD1-8 :UUUUUUUU ▪ If HDDs is used RAID GROUP1 HDD1-8 :OOOOOOOO	Displays RAID Level and HDD Status • U: Not used • O: Used • S: Spare • X: Not secured • F: Failed • R: Rebuilding

LCD Information	LCD Display	Details
Network Status	■ If NETWORK 1 is connected NET1:CONNECTED 192.168.168.100 ■ If NETWORK 1 is not connected NET1:UNPLUGGED XXX.XXX.XXX.XXX	Displays network status of NETWORK 1&2&3&4 and IP address If it's down linked, it will be displayed as XXX:XXX:XXX:XXX
Device Information	SRB-160S SN:S2MK0130218	Displays Model name and Serial Number
Firmware Information	FW VERSION: 1.0.0 BUILD: 2017.02.11	Displays firmware version and date

Initial IP address

As the network settings are initially configured to DHCP, it receives an IP address from the DHCP server. If no IP address is assigned, then the configured static IP address will be used. The initially configured Static IP address is as follows.

Port number	Default IP Address
1	192.168.3.100
2	192.168.4.100
3	192.168.5.100
4	192.168.6.100

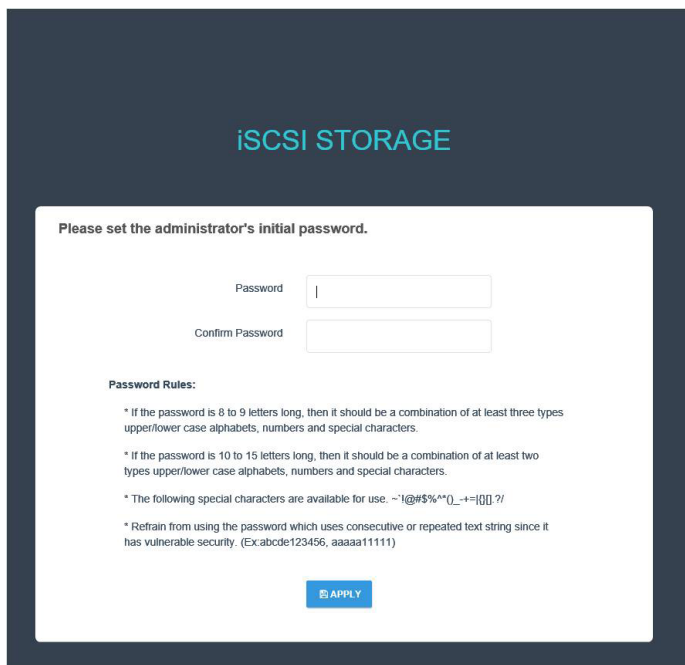
For information on how to change network settings, please refer to "Configure Network Settings" in "REMOTE MANAGER PROGRAM" (page 35).

Disk Mapping Table

Regarding the information of the secured SATA HDD, refer to the HDD Map.

Disk 1	Disk 2	Disk 3	Disk 4
Disk 5	Disk 6	Disk 7	Disk 8
Disk 9	Disk 10	Disk 11	Disk 12
Disk 13	Disk 14	Disk 15	Disk 16

SETTING THE ADMINISTRATOR'S INITIAL PASSWORD



The screenshot shows a web interface with a dark blue header and a white content area. The header contains the text "iSCSI STORAGE" in a light blue font. Below the header, there is a white box with a dark blue border. Inside this box, the text "Please set the administrator's initial password." is displayed. Below this text, there are two input fields: "Password" and "Confirm Password". The "Password" field has a small vertical line in the center. Below the input fields, there is a section titled "Password Rules:" followed by four bullet points. At the bottom of the white box, there is a blue button with the text "APPLY".

iSCSI STORAGE

Please set the administrator's initial password.

Password

Confirm Password

Password Rules:

- * If the password is 8 to 9 letters long, then it should be a combination of at least three types upper/lower case alphabets, numbers and special characters.
- * If the password is 10 to 15 letters long, then it should be a combination of at least two types upper/lower case alphabets, numbers and special characters.
- * The following special characters are available for use. ~!@#\$%^&*()_+=[]{}?/
- * Refrain from using the password which uses consecutive or repeated text string since it has vulnerable security. (Ex:abcde123456, aaaaa11111)

APPLY

When you access the web viewer first time, you must set the administrator's initial password.

Set the password according the password rules.

Web Viewer address : `http://<Device IP address>` (Ex. `http://192.168.1.100`)

Web Viewer Program

Web Viewer is a program that lets you remotely check the equipment status and change settings on the network without installing a separate application.

RECOMMENDED SYSTEM SPECIFICATIONS

Name	Specifications
Web Browser	• MS IE 10 or higher • Google Chrome 57 or higher • Mac Safari 9 or higher (required) • Firefox 43 or higher

MAJOR FEATURES

- **Storage setup**
 - RAID management: Search, create, delete RAID information
 - RAID management: Search, create, delete RAID information
 - iSCSI target: Search, create, delete iSCSI target information
- **Network setup**
 - Interface: Bonding settings, network settings
 - SMTP (mail): Administrator mail notice setup
 - SNMP: SNMP, VACM, trap setup
- **System setup**
 - General: Search equipment information, factory reset, set password, language settings, set web server connection method
 - Time & Date: Time zone settings, Time & Date settings, NTP server settings
 - Log: View Log, download Log
 - Update: View firmware version, Update firmware

Web Viewer Program

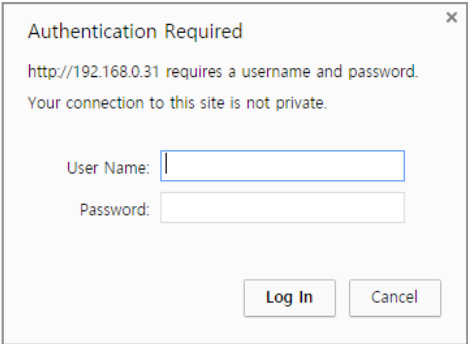
EXECUTE

Check the IP address on the LCD on the front side of the equipment, or search the equipment from the RemoteManager to check the IP address. Run the web browser and enter the address below in the address bar.

WEB VIEWER ADDRESS: HTTP://<EQUIPMENT IP ADDRESS> (E.G.) HTTP://192.168.1.100
HTTP://192.168.1.100/

ACCESS

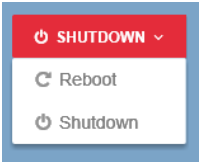
1. Enter the user name and password. The user name is set to admin by default.
2. Click the **[Log In]** button.



- If you enter an incorrect user name or password 5 times, then you will not be allowed to access for 30 seconds. Try again after 30 seconds.

SHUTDOWN/REBOOT

Click the **[SHUTDOWN]** button at the top right of the web screen, and then you can restart the equipment or exit.



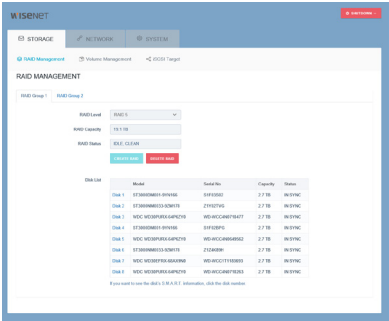
STORAGE

Sets RAID, Volume, iSCSI target to provide storage service through the iSCSI protocol.

RAID Management (retrieve information)

There are 2 RAID groups. RAID GROUP 1 comprises 1 through 8, and RAID GROUP 2 comprises 9 through 16.

Click a RAID GROUP to retrieve.
You can check the RAID information and disk information.



Click a disk number, and you can view the S.M.A.R.T. information of the selected disk.

S.M.A.R.T. Information [Disk 1]		
9	Power-On Hours Count	7696
10	Spin Retry Count	0
12	Power Cycle Count	726
183	SATA Downshift Error	34
184	End-to-End error	0
187	Reported Uncorrectable	297
188	Command Timeout	5
189	High Fly Writes	0
190	Temperature Diff	35
191	G-sense error rate	0
192	Power-off retract	767
193	Load/Unload cycle	9290
194	HDA temperature	35 °C
197	Current pending	0 Sector(s)
198	Offline scan wrong	0
199	UDMA CRC error rate	2
240	Head flying hours	6921
241	Total LBAs Written	51819
242	Total LBAs Read	64313
CLOSE		

Web Viewer Program

RAID Management (create)

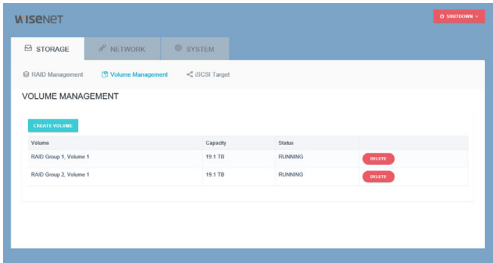
Select a RAID level and press the **[CREATE RAID]** button to create a RAID.

RAID Management (delete)

If a RAID has already been configured, press the **[DELETE RAID]** button and select OK to delete a RAID. If a volume exists in the RAID, then you can't delete the RAID. You would need to delete the applicable volume through Manage Volume before the RAID can be deleted.

Volume Management (retrieve information)

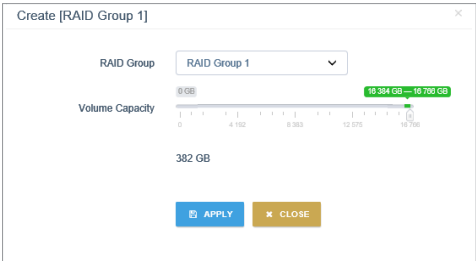
You can view the volume information.



Volume Management (create)

You can create a new volume.

1. Press the **[CREATE VOLUME]** button, and a Create Volume window will appear.
2. Select a RAID group and capacity to create a volume, and then press the **[APPLY]** button.



Volume Management (delete)

You can delete volumes that are not being used.

1. Click the **[DELETE]** button on the right side of the volume to delete it.
A window to confirm deletion of the volume will appear.
2. Enter the equipment password and click the **[APPLY]** button.
3. If an iSCSI target connected to the selected volume exists, then you can't delete the volume. You would need to delete the applicable iSCSI Target in the iSCSI Target menu before deleting the volume.

Delete

All data stored on the volume will be erased.
If you like to continue, please input your password.

Password

APPLY

CLOSE



- Please note that if you delete a volume, then all data in that volume will be lost.

iSCSI Target (retrieve information)

You can view the iSCSI Target information.

WISNET

STORAGE

NETWORK

SYSTEM

RASD Management

Volume Management

iSCSI Target

CREATE TARGET

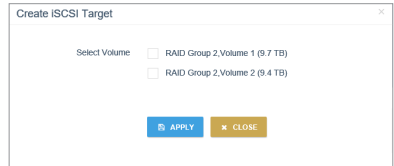
IDN	Volume	Capacity	Service Status	
ip:1915-16.com:volume:585-1655-17652913536	RASD Group 1, Volume 1 RASD Group 2, Volume 1	35.2 TB	Ready	Disable REMOVE

Web Viewer Program

iSCSI Target (create)

You can create a new iSCSI Target.

1. Press the **[CREATE TARGET]** button, and a Create Target window will appear.
2. Select a volume to connect.
3. Click the **[APPLY]** button, and an iSCSI Target is created.



- Create 1 iSCSI target (IQN) for each NVR to connect.

iSCSI Target (delete)

You can delete an iSCSI Target that is not used.

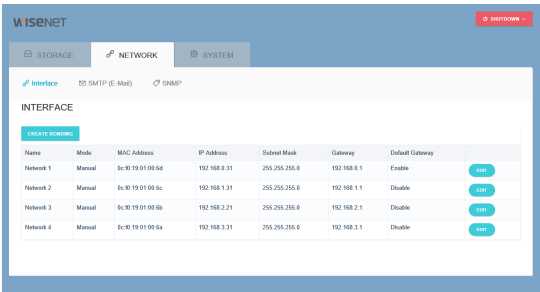
1. Click the **[DELETE]** button on the right side of the iSCSI Target information to delete it. The selected iSCSI Target will be deleted.
2. The selected iSCSI Target will not be deleted if it is in use. You would need to disconnect the iSCSI from the equipment before you can delete it.

NETWORK

Sets the network to access, monitor, and manage this product.

Interface (retrieve information)

You can retrieve the network interface information for the connected network port.



Interface (edit)

You can modify the network interface settings.

1. Click the **[EDIT]** button on the right side of the network port to modify it. A Network Settings window will appear.
2. Enter network information and click the **[APPLY]** button.

Network 1 Settings

IP Configuration Mode

☐ Manual ☒ Automatically

IP Address

192.168.0.25

Subnet Mask

255.255.255.0

Gateway

192.168.0.1

Default Gateway

☐

Primary DNS

8.8.8.8

Secondary DNS

8.8.4.4

Web Viewer Program

Interface (create bonding)

If you connect multiple recorders to this product, then bond 2 or more network ports in the Link Aggregation mode.

If you connect multiple recorders in a port, then recording may not work properly due to limitations in the network bandwidth.



- It is required to connect to a network switch that supports the IEEE 802.3ad Link Aggregation function and configure to a LAG (Link Aggregation Group) in order to support a required bandwidth.
- If you don't configure the settings through bonding in an IEEE 80.2ad Link Aggregation mode and don't configure ports connected to the switch to LAG (Link Aggregation Group), then network disconnection may occur.

1. Connect all network ports that you plan to use to the switch.

2. Click the **[Create Bonding]** button.

3. Sets a port, bonding mode, IP setting mode and IP address to configure bonding.

- Bonding mode

- Load balancing: Distributes loads using NICs bonded in serial order.
- IEEE 802.3ad Dynamic Link Aggregation: Operates multiple ports as a single logical port to increase the bandwidth significantly.
- XOR balance: Distributes loads based on the XOR calculation.
- Active/Standby: If a problem occurs in the NIC that is in an active state, the NIC in a standby state will be activated.

4. Click the **[APPLY]** button.

Interface (delete bonding)

You can delete the bonding configuration to use each network port individually.

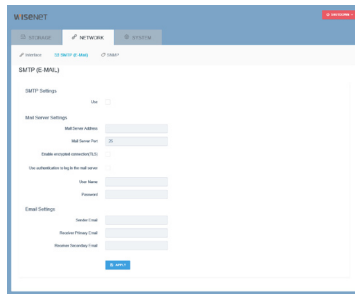
1. Click the **[DELETE]** button on the right side of the bonding information, and a Delete confirmation window will appear.

2. Press the **[APPLY]** button, and bonding configuration will be disabled.

Set SMTP (email)

To send a notification email to a designated email account when an event occurs, such as device malfunction, you can set an SMTP.

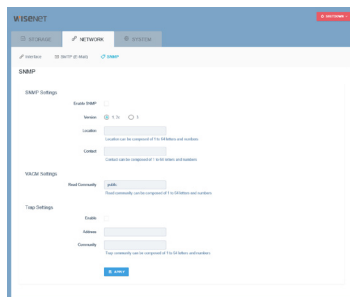
1. Select the check box to enable SMTP.
2. Enter the information for your mail server.
3. Enter the email address of the addressee and addresser.
4. Click the **[APPLY]** button, and a test email will be sent according to the SMTP settings. If it works properly, then the configured settings will be applied.



Set SNMP

To monitor this product, you can set an SNMP.

1. Check the SNMP check box to enable it and enter a version, location, and contact.
2. If VACM is used, then enter the certification information to match the SNMP version.
3. To use a trap, check the check box to enable it and enter an address and community.
4. Click the **[APPLY]** button.



Web Viewer Program

SYSTEM

You can access functions for the use and maintenance of this product.

The screenshot shows the 'WISENET' web interface. The top navigation bar includes 'STORAGE', 'NETWORK', and 'SYSTEM' tabs. The 'SYSTEM' tab is selected, leading to the 'GENERAL' settings page. The 'Device Information' section displays fields for Model Name (WVB-1003), Serial Number (WISENET00000), System Up Time (3 days, 19:27:07), and System Load Average (1.1%). A red 'Factory Reset' button is located below the load average. The 'Password Settings' section includes input fields for Old Password, New Password, and Confirm New Password, with a password strength requirement note. The 'Language Settings' section shows a dropdown menu set to 'English'. The 'Web Server Connection Settings' section has radio buttons for 'HTTP' (selected) and 'HTTPS'. A 'Save' button is positioned at the bottom of the settings area.

General

- **Device information**
 - You can retrieve the model name, serial number, system operating time, and average system load information.
 - If you click the **[FACTORY RESET]** button, then the system settings information will be initialized.
- **Password settings**
 - You can change the administrator's password.
- **Language settings**
 - You can change the language settings for the web Viewer.
- **Web server connection settings**
 - You can select HTTP or HTTPS for the web server connection method.

Date & Time

• Time zone settings

You can change the time zone for the product.

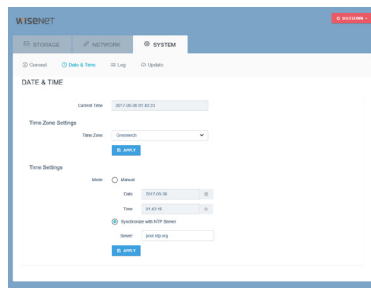
1. Select the desired time zone.
2. Click the **[APPLY]** button.

• Time settings

You can change the system time.

1. Select the Time & Date Settings mode.
 - **Manual** : Enter a Time and Date to change directly.
 - **NTP Server** : Enter an NTP server address.
2. Click the **[APPLY]** button.

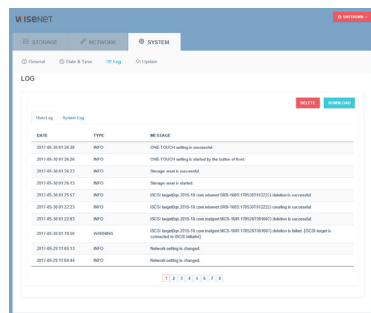
To synchronize the system time with the NTP server time, first check whether the NTP server address is valid. Synchronization will only be applied if the NTP server works properly.



Log

You can view the product user log and system log.

Click the **[DELETE]** button, and you can delete all logs.
Click the **[DOWNLOAD]** button to download logs to your PC in a file format.

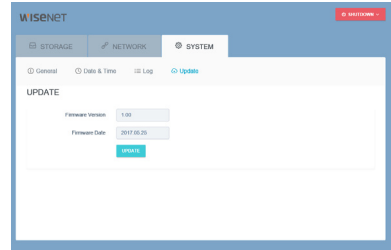


Web Viewer Program

Update

You can check the version of the installed firmware, as well as update the firmware.

1. Click the **[Update]** button and select a file to upload.
2. Click the **[APPLY]** button in the update confirmation window, and then the firmware updating process will begin. After updating, the equipment will be restarted.



remote manager utility

The REMOTE MANAGER utility was developed for user to discover the device in network and set it up easily using the PC located in the remote place.

SYSTEM REQUIREMENTS

Item	Recommended
OS	• Windows 7 32bit/64bit • Windows 8 32bit/64bit • Windows 8.1 32bit/64bit • Windows 10 32bit/64bit • MAC OS X 10.8 or later

MAIN FEATURES

- **Discover the device**
- **Network Settings**
 - Automatically/Manual mode selection
 - IP Address, Subnet, Gateway, Default Gateway configuration
- **Storage Settings**
 - [One_Touch] Configures DISK with RAID5, and automatically creates volume and iSCSI target according to DISK size
 - User can create a volume and create an iSCSI target by setting the RAID level and his/her desired number of volumes.
 - Resets all data of HDDs secured in the device
- **Disk Information**
 - RAID information, all HDDs information and S.M.A.R.T. information
- **Connect to website**
- **Update the firmware**

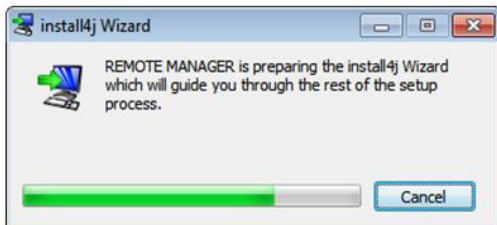
remote manager utility

REMOTE MANAGER INSTALLATION

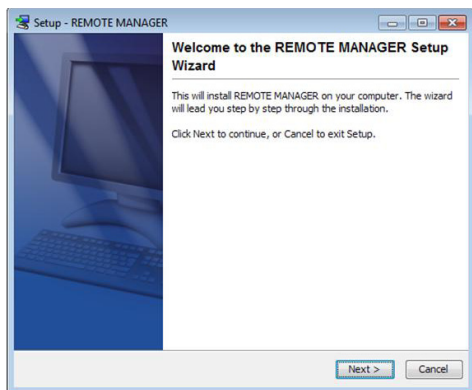


- Prepare the installer file corresponding to the OS of the PC.
- Unlike the Windows operating system, MAC does not support an installation type file (portable type).

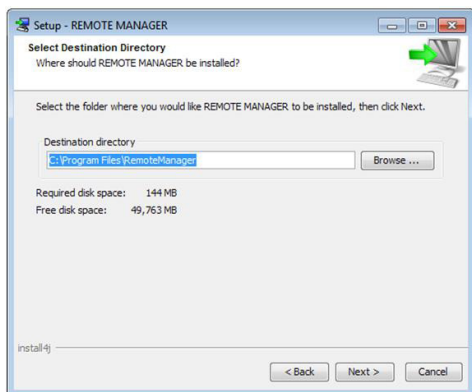
1. Execute the REMOTE MANAGER installer file "**RemoteManager_<version>_Setup_<32bit/64bit>.exe**".



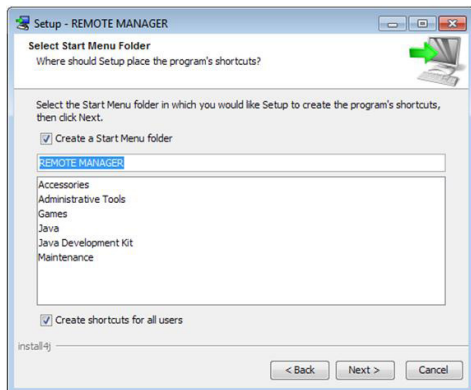
2. Click the **[Next]** button.



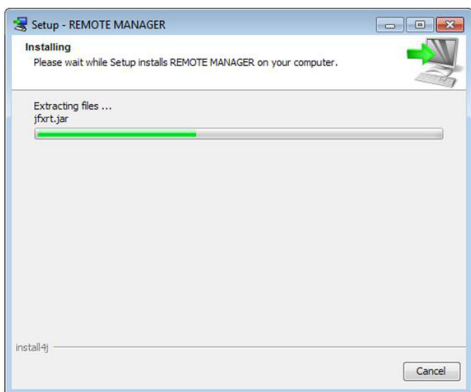
3. Select the directory in that the REMOTE MANAGER will be installed and click the **[Next]** button.



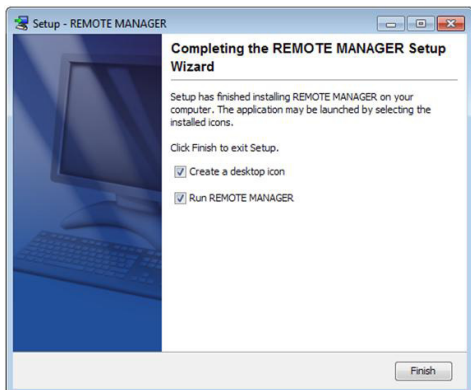
4. Click the **[Next]** button.



5. The REMOTE MANAGER installation is in progress

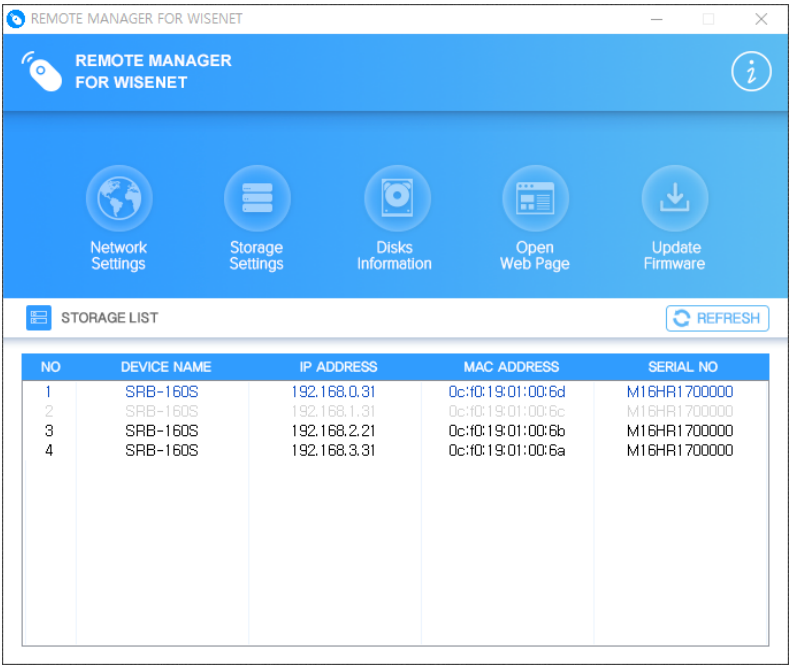


6. If the installation is completed, click the **[Finish]** button.



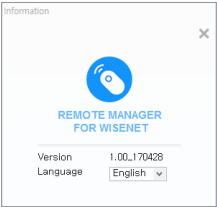
remote manager utility

COMPOSITION AND MENU OF THE REMOTE MANAGER



- Indicates whether the web page can be connected or not using the configured IP address.
Blue: can be connected
Gray: can't be connected

- Click the information icon at the top right of the screen, and then you can view the version information and change language settings.



NETWORK SETTINGS

You can set the network information of the device.

1. Select the device that you want to configure the network information on the **STORAGE LIST**
2. Click the **[Network Settings]** button.
3. Change the network information of the device following the network environment.
 - You can select either automatic or manual mode.
 - Change the IP Address, Subnet, Gateway, Default Gateway.
4. Input the password of the device.
5. Click the **[OK]** button.

Network Settings

Network 3

Mode: Automatically

IP Address: 192.168.0.16

Subnet Mask: 255.255.255.0

Gateway: 192.168.0.1

☐ Default Gateway

Authentication

Password:

CANCEL OK



- When you configure the IP address, you must configure as the unique IP address different from the IP addresses of other devices located in the network.
- If you select the Manual mode in <Mode>, you must configure all of the IP Address, the Subnet, and the Gateway.
- User cannot change the settings of Default Gateway if the network bonding is set.

STORAGE SETTINGS

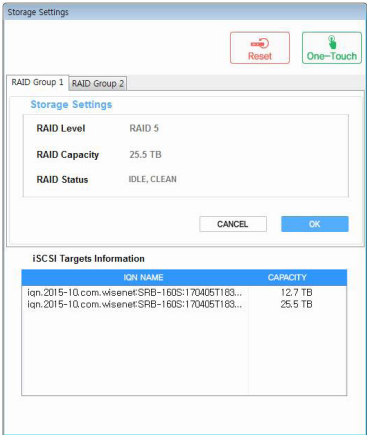
The menu is displayed differently depending on the RAID status set on the device.

Storage Reset

You can reset all data of HDDs secured in the device.

1. Select the device that you want to do the **STORAGE RESET** on the **STORAGE LIST**.
2. Click the **[Storage Settings]** button.
3. Click the **[Reset]** button and input the password of the device

- ! ■ If the **STORAGE RESET** is performed, all data will be disappeared. Please be careful!
- If an iSCSI target is connected to a different device, then you can't reset the storage.

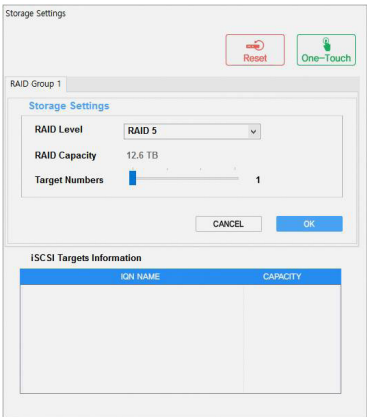


Storage Settings

You can do as sams as the One-Touch Button Setup or change desired RAID level and volume numbers.

1. Select the device that you want to do the **Storage Settings** on the **STORAGE LIST**.
2. Click the **[Storage Settings]** button.
3. If click the **[One-Touch]** button, automatically creates the RAID 5 volume.
4. If you want to change RAID level and volume number, click the **[OK]** button. You can make max 4 volumes.

- ! ■ Before creating a RAID, check the status of HDDs on the LCD of the front cover. If a HDD is not inserted well, "X" is displayed. In this case, eject the HDD tray and insert again. And check that "X" is changed to "U".
- When the storage setup fails, the "Incorrect RAID settings." popup is displayed. In this case, please refer to "Troubleshooting". (Page 45)



DISKS INFORMATION

You can get the detail information of HDDs secured in the device
Select the device and click the **[Disks Information]** button

In the Disk information, you can see the model name, the serial number, the capacity, and the state of the HDD secured in the device.

Disks Information

NO	MODEL	SERIAL NO	CAPACITY	STATUS
1	ST3000NM001-9YN166	S1F03302	2.7 TB	IN SYNC
2	ST3000NM0033-SZM178	Z1V02TVG	2.7 TB	IN SYNC
3	WDC WD30PURX-6AP6ZV0	WD-WCC4N070477	2.7 TB	IN SYNC
4	ST3000NM001-9YN166	S1F03BPG	2.7 TB	IN SYNC
5	WDC WD30PURX-6AP6ZV0	WD-WCC4N0645662	2.7 TB	IN SYNC
6	ST3000NM0033-SZM178	Z1Z4K9SH	2.7 TB	IN SYNC
7	WDC WD30EFRX-68AXSN0	WD-WCC1T1188693	2.7 TB	IN SYNC
8	WDC WD30PURX-6AP6ZV0	WD-WCC4N070263	2.7 TB	IN SYNC
9	WDC WD30EFRX-68AXSN0	WD-WCC1T1158679	2.7 TB	IN SYNC
10	WDC WD30EFRX-68AXSN0	WD-WCC1T1174742	2.7 TB	IN SYNC
11	WDC WD30EURX-64HYZV0	WD-WMC4N062587	2.7 TB	IN SYNC
12	ST3000NM0033-SZM178	Z1Z4D406	2.7 TB	IN SYNC
13	WDC WD30EFRX-68AXSN0	WD-WCC1T1140923	2.7 TB	IN SYNC
14	WDC WD30EFRX-68AXSN0	WD-WCC1T1171366	2.7 TB	IN SYNC
15	ST3000NM0033-SZM178	Z1Z4EGBR	2.7 TB	IN SYNC
16	WDC WD30EFRX-68AXSN0	WD-WCC1T1174768	2.7 TB	IN SYNC

CANCEL

If you want to see the S.M.A.R.T. information of an HDD, double-click the HDD that you want to see in the list of DISK INFORMATION.

S.M.A.R.T. information

S.M.A.R.T. information- Disk 11

ID	ATTRIBUTE NAME	VALUE
1	Read Error Rate	4
3	Spin-Up Time	4400
4	Start/Stop Count	199
5	Reallocated Sectors	0
7	Seek Error Rate	0
9	Power-On Hours Count	9131
10	Spin Retry Count	0
11	Calibration retry	0
12	Power Cycle Count	199
192	Power-off retract	196
193	Load/Unload cycle	2
194	HDA temperature	37
196	Reallocation count	0
197	Current pending	2
198	Offline scan wrong	0
199	UDMA CRC error rate	0
200	Write error rate	0

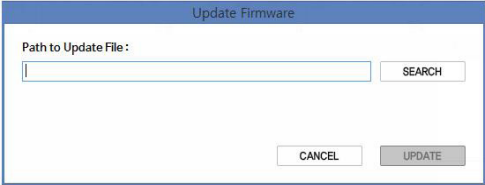
CANCEL

UPDATE FIRMWARE

You can upgrade the firmware of the device.

1. Select the device that you want to upgrade the firmware on the **STORAGE LIST**.

2. Click the **[Update Firmware]** button. And, you can see the right pop-up menu.



Update Firmware

Path to Update File :

SEARCH

CANCEL UPDATE

3. Click the **[SEARCH]** button and move the directory where the F/W upgrade file is located. Select the F/W upgrade file that you want to upgrade (F/W upgrade file: <Model name>_<F/W version>_<date>.img)
4. Click the **[UPDATE]** button.
5. The upgrade status will be shown as pop-up menu.
6. If the right pop-up window is appeared, it's done.

one-touch button setup

WHAT IS THE ONE-TOUCH BUTTON SETUP?

This function is very useful to setup a device very easily.

- Refer to "Part Names and Functions (Front)" for button operation. (Page 9)

The device that was set up with ONE-TOUCH BUTTON SETUP has following features.

- **The RAID level of the device is RAID5.**
 - Minimum 3 HDDs in each RAID GROUP must be secured in the device to do ONE-TOUCH BUTTON SETUP because RAID5 is needed minimum 3 HDDs to create an RAID volume.
- **Integrates disks belonging to each RAID group into a single volume.**
- **Creating One iSCSI Target**
 - ONE-TOUCH BUTTON SETUP creates one iSCSI Target with all volumes.

one-touch button setup

STARTING THE ONE-TOUCH BUTTON SETUP

1. Check the state of all HDDs secured in the device. All the states of HDDs must be **U(Unused)** in the GROUP1 and GROUP2. Minimum 3 HDDs are needed.

RAID GROUP1
HDD1-8:UUUUUUUU

RAID GROUP2
HDD9-16:UUUUUUUU

2. Push the Button 1 left to the front LCD. You can see the right LCD message.

SYS INIT?
← YES NO →

3. Push the Button 1. You can see the right LCD message.

INIT SYS...

4. If the ONE-TOUCH BUTTON SETUP is performed properly, you can see the right LCD message. The state of HDDs will be changed to **O(used)**.

RAID GROUP1
RAID5 OK

RAID GROUP1
HDD1-8:OOOOOOOO

RAID GROUP2
RAID5 OK

RAID GROUP2
HDD9-16:OOOOOOOO



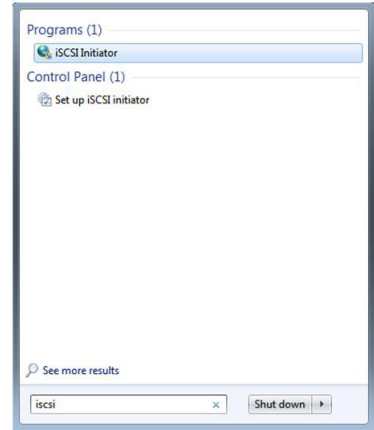
- If the ONE-TOUCH BUTTON SETUP was not performed properly and the LCD message is different from the LCD message of 4 please refer to the **ONE-TOUCH button setup error** section. (pages 46~47)

using the device as an iSCSI storage

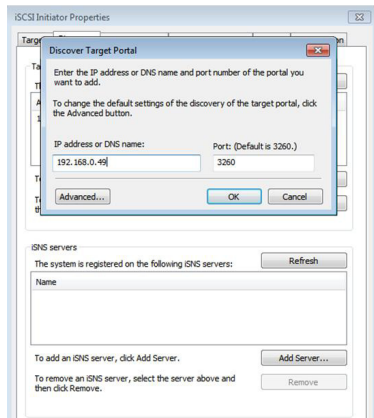
USING AN iSCSI STORAGE ON WINDOWS OS

If you are using Windows 7 or above, Microsoft iSCSI Software Initiator is included and you can find this program like the below window.

1. If you search the keyword as 'iSCSI' on Windows OS, The **iSCSI Initiator** program will be searched. You must execute the iSCSI Initiator program to use the iSCSI storage.

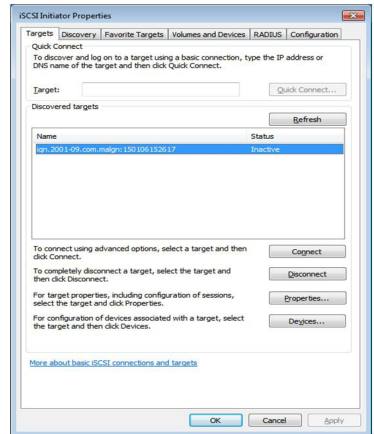


2. If you execute the iSCSI Initiator program, the right window appears in the computer screen. Under the **[Discovery]** tab, click the **[Discover Target Portal]** button. Enter the IP address of the device and the port number for this iSCSI service. The port number is 3260.

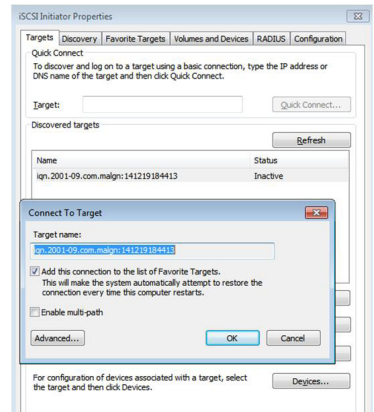


using the device as an iSCSI storage

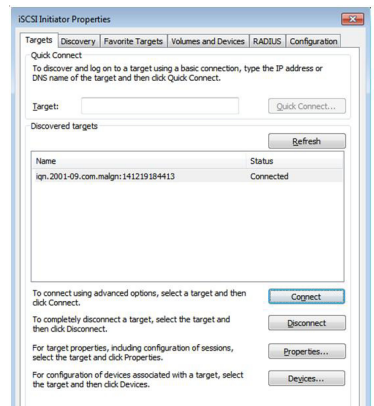
3. The available iSCSI targets and their status will then be shown under the **[Targets]** tab. Select the target to connect then click the **[Connect]** button.



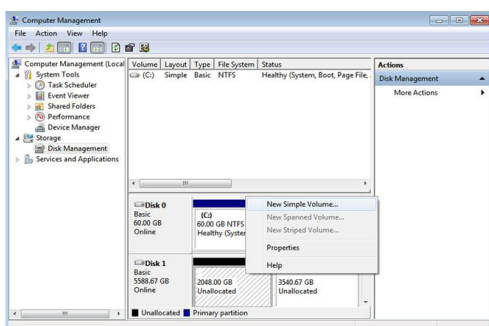
4. You may click the **[Advanced...]** button to specify the logon information if you have configured the authentication otherwise simply click the **[OK]** button to continue.



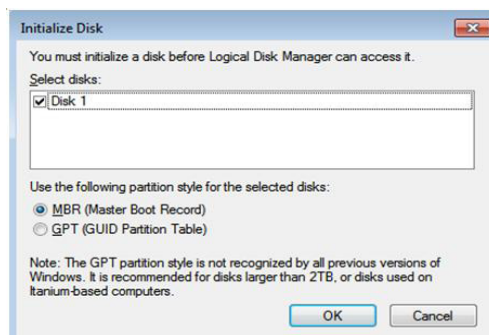
5. Upon successful logon, the status of the target is displayed **Connected**.



- After the target has been connected, Windows will detect its presence and treat it as if a new HDD has been added which needs to be initialized and formatted before you can use it. Right click **My computer > Manage** to open the **Computer Management** window then go to **Disk Management** and a window should pop up automatically asking whether you want to initialize the newly found HDD. Click **[OK]** button then format this drive as normally you would then adding a new HDD.



- When you initialize the connected iSCSI storage, if the connected iSCSI target volume is larger than 20TB, you must select the **GPT(GUID Partition Table)** partition style.



USING AN iSCSI STORAGE ON LINUX

To use an iSCSI Storage on Linux, you must install the Open-iSCSI Initiator on your Linux system.

For more information and download location of Open-iSCSI, please visit: <http://www.open-iscsi.org>.

- After installing Open-iSCSI, restart the open-iscsi service.
/etc/init.d/open-iscsi restart
- Discover the iSCSI targets on a specific host, for example, 192.168.168.100 with default port 3260.
iscsiadm -m discovery -t sendtargets -p 192.168.168.100:3260

using the device as an iSCSI storage

- Check the available iSCSI node(s) to connect.
iscsiadm -m node
- You can delete the node(s) you don't want to connect to when the service is on with the following command.
iscsiadm -m node --op delete --targetname TARGET_IQN
- You can login all the available nodes.
iscsiadm -m node -L all
- Check the device status with dmesg.
dmesg | tail

If the device name is /dev/sdb, treat it as if a new HDD has been added which needs to be initialized and formatted before you can use it. Do partitioning, formatting, and mounting this device to use

```
root@ubuntu:/etc/iscsi# ls
ifaces  initiatorname.iscsi  iscsid.conf
root@ubuntu:/etc/iscsi# iscsiadm -m discovery -t sendtargets -p 192.168.0.57
192.168.0.57:3260,1 iqn.2001-09.com.malg:141020151744
192.168.0.200:3260,1 iqn.2001-09.com.malg:141020151744
root@ubuntu:/etc/iscsi# iscsiadm -m node
192.168.0.57:3260,1 iqn.2001-09.com.malg:141020151744
192.168.0.200:3260,1 iqn.2001-09.com.malg:141020151744
root@ubuntu:/etc/iscsi# iscsiadm -m node -L all
Logging in to [iface: default, target: iqn.2001-09.com.malg:141020151744, porta
l: 192.168.0.57,3260]
Logging in to [iface: default, target: iqn.2001-09.com.malg:141020151744, porta
l: 192.168.0.200,3260]
Login to [iface: default, target: iqn.2001-09.com.malg:141020151744, portal: 19
2.168.0.57,3260]: successful
Login to [iface: default, target: iqn.2001-09.com.malg:141020151744, portal: 19
2.168.0.200,3260]: successful
root@ubuntu:/etc/iscsi# dmesg | tail
[ 1932.835737] sd 4:0:0:0: [sdb] Write cache: disabled, read cache: enabled, sup
ports DPO and FUA
[ 1932.835977] sd 3:0:0:0: [sdc] Write cache: disabled, read cache: enabled, sup
ports DPO and FUA
[ 1932.836672] sd 4:0:0:0: [sdb] 3418420992 4096-byte logical blocks: (14.0 TB/1
2.7 TiB)
[ 1932.836852] sd 3:0:0:0: [sdc] 3418420992 4096-byte logical blocks: (14.0 TB/1
2.7 TiB)
[ 1932.842416] sdc: unknown partition table
[ 1932.842458] sdb: unknown partition table
[ 1932.844135] sd 4:0:0:0: [sdb] 3418420992 4096-byte logical blocks: (14.0 TB/1
2.7 TiB)
[ 1932.845576] sd 3:0:0:0: [sdc] 3418420992 4096-byte logical blocks: (14.0 TB/1
```

RAID LEVEL AND STATUS MESSAGE ON LCD

- The required minimum HDD number corresponding RAID level

RAID Level	Minimum HDD number
RAID 0	2
RAID 10	4
RAID 5	3
RAID 5 + Hot Standby	4
RAID 6	4

- Abnormal RAID operating LCD messages

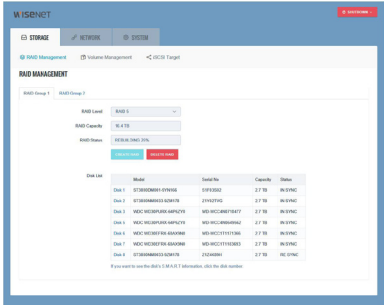
Message	RAID Status & Solution
RAID GROUP1 RAID5 DISK1 : X	■ Status: RAID became a degraded state because one of the secured HDDs was disconnected. ■ Solution: Check the connection state of the HDD shown in the LCD.
RAID GROUP1 RAID5 DISK1 : F	■ Status: When the RAID configuration is completed and HDD 1 fails ■ Solution: Change the HDD shown in the LCD with a new HDD.
RAID GROUP1 HALTED:INACTIVE	■ State: RAID became a halted state because some of the secured HDDs were failed or disconnected. ■ Solution: Do the Storage Reset function and check the all HDDs secured in the device.
RAID GROUP1 HALTED:HDD LACK	

- Incorrect RAID settings

Message	Cause & Solution
Incorrect RAID settings.	■ Cause Failed to configure RAID as S.M.A.R.T. value because one of the mounted HDD's status is abnormal.
	■ Solution - Check the values for ID5 Reallocated Sectors, ID197 Current Pending, ID198 Offline scan Wrong in the S.M.A.R.T. information under "Disk Information" in Remote Manager. If the value is 16 or higher, replace the HDD with a new one and try again. - Check the user log in "System" under Web Viewer, identify and replace any problematic HDDs, and then try again.

ONE-TOUCH BUTTON SETUP ERROR

ONE-TOUCH BUTTON SETUP ERROR I

Message	Cause & Solution																																																		
SYS INIT FAILED SYS IS OPERATING	■ Cause The device is operating as an iSCSI storage. The HDDs secured in the device have prior RAID information. ■ Solution ① Connect to the web page of the device. ② Input the password to login. ③ Select the RAID Management category, the subordinate category of the STORAGE ④ Select the RAID menu on the tab menu. ⑤ The information of HDD secured in the device can be shown. ⑥ Click the [Delete RAID] button. If there are any volume or iSCSI target on the RAID group, delete the volumes and the iSCSI targets and try again. <table><tr><th>Disk ID</th><th>Model</th><th>Serial No.</th><th>Capacity</th><th>Status</th></tr><tr><td>Disk 0</td><td>ST1000NM0001-1P0000</td><td>10101000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 1</td><td>ST1000NM0001-1P0000</td><td>10101000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 2</td><td>WD10EARS-0000000000000000</td><td>WD10EARS-0000000000000000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 3</td><td>WD10EARS-0000000000000000</td><td>WD10EARS-0000000000000000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 4</td><td>WD10EARS-0000000000000000</td><td>WD10EARS-0000000000000000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 5</td><td>WD10EARS-0000000000000000</td><td>WD10EARS-0000000000000000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 6</td><td>WD10EARS-0000000000000000</td><td>WD10EARS-0000000000000000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 7</td><td>WD10EARS-0000000000000000</td><td>WD10EARS-0000000000000000</td><td>2.7 TB</td><td>NO iSCSI</td></tr><tr><td>Disk 8</td><td>ST1000NM0001-1P0000</td><td>10101000</td><td>2.7 TB</td><td>NO iSCSI</td></tr></table> ⑦ If the Storage Reset was performed properly, you can see the below message in the front LCD. RAID GROUP1 NO INFORMATION	Disk ID	Model	Serial No.	Capacity	Status	Disk 0	ST1000NM0001-1P0000	10101000	2.7 TB	NO iSCSI	Disk 1	ST1000NM0001-1P0000	10101000	2.7 TB	NO iSCSI	Disk 2	WD10EARS-0000000000000000	WD10EARS-0000000000000000	2.7 TB	NO iSCSI	Disk 3	WD10EARS-0000000000000000	WD10EARS-0000000000000000	2.7 TB	NO iSCSI	Disk 4	WD10EARS-0000000000000000	WD10EARS-0000000000000000	2.7 TB	NO iSCSI	Disk 5	WD10EARS-0000000000000000	WD10EARS-0000000000000000	2.7 TB	NO iSCSI	Disk 6	WD10EARS-0000000000000000	WD10EARS-0000000000000000	2.7 TB	NO iSCSI	Disk 7	WD10EARS-0000000000000000	WD10EARS-0000000000000000	2.7 TB	NO iSCSI	Disk 8	ST1000NM0001-1P0000	10101000	2.7 TB	NO iSCSI
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• ONE-TOUCH BUTTON SETUP ERROR II

Message	Cause & Solution
SYS INIT FAILED NEED MORE HDD	■ Cause • Secured HDDs in a RAID group is less than 3 • To make a RAID5 volume, there must be 3 or more. ■ Solution ① Secure 3 HDDs or more in each RAID Group. ② Push the one-touch Button. ③ If the one-touch setup is completed, you can see the below message in the front LCD. RAID GROUP1 RAID5 OK
SYS INIT FAILED HDD SMART ERROR	■ Cause Failed to configure RAID as S.M.A.R.T. value because one of the mounted HDD's status is abnormal. ■ Solution - Check the values for ID5 Reallocated Sectors, ID197 Current Pending, ID198 Offline scan Wrong in the S.M.A.R.T. information under "Disk Information" in Remote Manager. If the value is 16 or higher, replace the HDD with a new one and try again. - Check the user log in "System" under Web Viewer, identify and replace any problematic HDDs, and then try again.

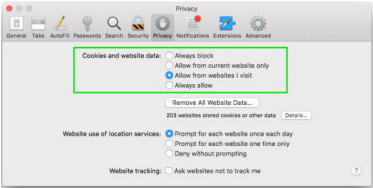
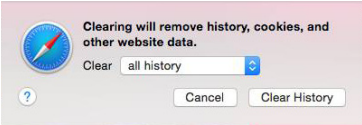
INTERNET EXPLORER AUTHENTICATION FAILURE

Message	Cause & Solution
Internet Explorer repeatedly shows authentication windows	■ Cause • If the date of PC and the storage is different, Internet Explorer cannot authenticate. ■ Solution • Synchronize the date of PC and the storage and try again.

WINDOWS iSCSI INITIATOR CONNECTION FAILURE

Message	Cause & Solution
The target does not have enough resources to process the given request	■ Cause • The storage allows only one connection for an iSCSI target.
	■ Solution • Disconnect the iSCSI target and try again. You can check the information of the initiator for the currently connected iSCSI in the "Storage > iSCSI Target" menu of the Web Viewer.

FIRMWARE UPDATE FAILURE IN SAFARI BROWSER ON MAC

Message	Cause & Solution
Firmware update do not works in Safari browser on Mac	■ Cause The use of cookies for SRB-160S Web Viewer is restricted.
	■ Solution ① Click "Safari>References", and click "Privacy" ② Select a "Cookies and website data" option, "Allow from websites I visit"  ③ Click "History > Clear History". ④ Select "all history", and click "Clear History" button.  ⑤ Close all Safari browser, and restart.

SPECIFICATION

Model		SRB-160S
Performance		
Operating System	Embedded	Linux
Recording	Bandwidth	Max. 800Mbps
Storage	Built-In	N/A
	Internal HDD	16 (Max 128TB, RAID-0 Mode), Hot-Swappable
	RAID	RAID 0 / 10 / 5 / 6, RAID5+Hotstandby
	iSCSI Volume	Max. 8 (8 NVRs can be connected)
Network		
Interface		RJ-45(Gigabit Ethernet) x4
Protocol		iSCSI(IP-SAN), DHCP, HTTP, TCP/IP, UDP/IP, SNMP v1/v2c/v3, SMTP, DNS, NTP, HTTPS
IP Version		IPv4
Security		User access Log, Password Protection
Language		English, Korean
OS		Windows 7,8,8.1,10(32/64bit), Mac OS X(10.8 or above)
Web Browser		MS IE 10 or higher, Google Chrome 57 or higher, Firefox 43 or higher, Mac Safari 9 or higher (required)
Functions		
Remote Manager	Setup Items	Network Setup Storage settings (reset storage, storage one-touch settings) Check disk information Connect to website Update firmware
Redundancy	Network Bonding	Network Failover, Load Balancing
System Control	One-Touch Setup	Create RAID-5 Volume, iSCSI Setup

specification

Model		SRB-160S
Indicator/Interface		
Front	Indicator	LED(Status indicator) : Error(1), Action(1) LCD Panel : Status of System/Disk/RAID Inner LED : Mute(1), Power(1)"
	Switch	Front Button(2) : One-Touch Setup, LCD Setup Inner Button(2) : Mute (1), Power(1)"
	Key Lock	Yes
Connectors	Ethernet	RJ-45 4ea (1Gbps)
	USB	2EA(Rear) : Use restriction
	Serial	RS-232C : Reserved
	Power Cord	2EA AC Inlet
Environmental		
Operating Temperature / Humidity		+0°C to +40°C(+32°F to +104°F)
Humidity		20% ~ 85% RH
Electrical		
Power		100 ~ 240 VAC ±10%; 50/60 Hz, 5.8~4A (Dual SMPS)
Power Consumption		Max. (300)W (853 BTU with HDD 16ea)
Mechanical		
Color / Material		Black / Metal
Dimension (WxHxD)		442 x 133 x 595mm (17.40" x 5.24" x 23.43") (3U)
Weight		Approx. 16.0Kg (24.3 lb, HDD not included)
Standard Approvals		FCC, CE, UL



Hanwha Techwin cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products.

The Eco mark represents Hanwha Techwin's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.



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(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.



Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

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