



MODEL:
IS-453S-8G

**4-bay Industrial NAS/NVR for
Tough or Mobile Environments**

User Manual

Revision

Date	Version	Changes
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Manual Conventions



WARNING

Warnings appear where overlooked details may cause damage to the equipment or result in personal injury. Warnings should be taken seriously.



CAUTION

Cautionary messages should be heeded to help reduce the chance of losing data or damaging the product.



NOTE

These messages inform the reader of essential but non-critical information. These messages should be read carefully as any directions or instructions contained therein can help avoid making mistakes.



HOT SURFACE

This symbol indicates a hot surface that should not be touched without taking care.

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Chapter

1

Introduction

1.1 Overview



Figure 1-1: IS-453S-8G Series Industrial NAS

The 4-bay compact IS-453S-8G is powered by an industrial-grade quad-core 1.91 GHz Intel® processor with AES-NI hardware encryption engine, 8 GB DDR3L RAM configurations, and two gigabit LAN ports to deliver remarkable speeds.

Engineered with a rugged steel body and no moving parts, this small form factor IS-453S-8G NAS is capable of operating under wide temperatures from -40°C to +50°C (-40°F ~ 122°F) in fanless operation. It is compliant with the military-grade MIL-STD-810G-514.6E-1 simulation test for anti-vibration.

The IS-453S-8G features dual power inputs that can ensure continual operation in various locations with 9 ~ 36 volts DC support. The ACC on mode is designed for vehicle applications and the use of the ACC signal can control power on/off.

1.2 Benefits

The IS-453S-8G industrial NAS has the following benefits:

- Rugged design with high resistance to vibration and impact
- Dust-resistant and fanless design
- Wide operating temperature range: -40°C ~ 50°C (-40°F ~ 120°F)
- Up to 221MB/s read and 214MB/s write speed with two Gigabit LAN ports
- Complete solutions for file sharing, backup, disaster recovery, and data security management

IS-453S-8G Industrial NAS

1.3 Features

The IS-453S-8G has the following features

- RoHS compliant design
- Fanless system
- 1.91GHz Intel® Atom™ quad-core processor
- 8 GB DDR3L SO-DIMM memory
- Dual GbE LAN for high speed network applications
- Support four 2.5" SSD or HDD, hot swappable
- On-the-fly transcoding
- Extended temperature range
- Support IP surveillance

1.4 Front Panel

The IS-453S-8G front panel contains six LED indicators:

- 1 x Status LED
- 1 x LAN LED
- 4 x HDD LED

An overview of the front panel is shown in **Figure 1-2** below.



Figure 1-2: Front Panel

1.4.1 LED Indicators

The LED indicators of the NAS indicate the system status and information. When the NAS is turned on, check the following items to make sure the system status is normal. Note that the following LED information is applicable only when users have properly installed the hard drive, and connected the NAS to the network and the power supply.

LED	Color	LED Status	Description
System Status	Red/Green	Flashes green and red alternately every 0.5 sec.	<ol style="list-style-type: none"> 1. The hard drive on the NAS is being formatted. 2. The NAS is being initialized. 3. The system firmware is being updated. 4. RAID rebuilding is in process. 5. Online RAID Capacity Expansion is in process. 6. Online RAID Level Migration is in process.
		Red	<ol style="list-style-type: none"> 1. The hard drive is invalid. 2. The disk volume has reached its full capacity. 3. The disk volume is going to be full. 4. The system fan is out of function. 5. An error occurs when accessing (read/write) the disk data. 6. A bad sector is detected on the hard drive. 7. The NAS is in degraded read-only mode (2 member drives fail in a RAID 5 or RAID 6 configuration, the disk data can still be read). 8. Hardware self-test error.
		Flashes red every 0.5 sec.	The NAS is in degraded mode (one member drive fails in RAID 1, RAID 5 or RAID 6 configuration).
		Flashes green every 0.5 sec.	<ol style="list-style-type: none"> 1. The NAS is starting up. 2. The NAS is not configured. 3. A hard disk drive is not formatted.
		Flashes green every 2 sec.	The NAS is in S3 sleep mode.
		Green	The NAS is ready
		Off	All the hard disk drives on the NAS are in standby mode.

IS-453S-8G Industrial NAS

LAN	Orange	Orange	The disk data is being accessed from the network and a read/write error occurs during the process.
		Flashes orange	The NAS is being accessed from the network.

Table 1-1: LED Indicator Description

1.4.2 Alarm Buzzer

The beep alarm can be disabled in “System Administration” → “Hardware Settings”.

Beep Sound	Number of Times	Description
Short beep (0.5 sec)	1	<ol style="list-style-type: none"> 1. The NAS is starting up. 2. The NAS is being shut down (software shutdown). 3. The user presses the reset button to reset the NAS. 4. The system firmware has been updated.
Short beep (0.5 sec)	3	The user tries to copy the NAS data to the external storage device from the front USB port, but the data cannot be copied.
Long beep (1.5 sec)	3, every 5 min	The system fan is out of function.
Long beep (1.5 sec)	2	<ol style="list-style-type: none"> 1. The disk volume is going to be full. 2. The disk volume has reached its full capacity. 3. The hard drives on the NAS are in degraded mode. 4. The user starts the hard drive rebuilding process. 5. A hard drive is plugged in or out.
	1	<ol style="list-style-type: none"> 1. The NAS is turned off by force shutdown (hardware shutdown). 2. The NAS has been turned on successfully and is ready.

Table 1-2: Alarm Buzzer Description

1.5 Rear Panel

The rear panel of the IS-453S-8G provides access to the following external I/O connectors.

- 1 x 12 V DC power input jack
- 1 x 9 V ~ 36 V DC power input terminal block (4-pin)
- 1 x Audio mic-in jack
- 1 x Audio out jack

- 1 x HDMI connector
- 2 x RJ-45 GbE connector
- 2 x USB 2.0 port connector
- 2 x USB 3.0 port connector
- 1 x Kensington security slot
- 1 x Reset button
- 1 x Power button
- 1 x ACC on/off switch

An overview of the rear panel is shown in **Figure 1-3**.

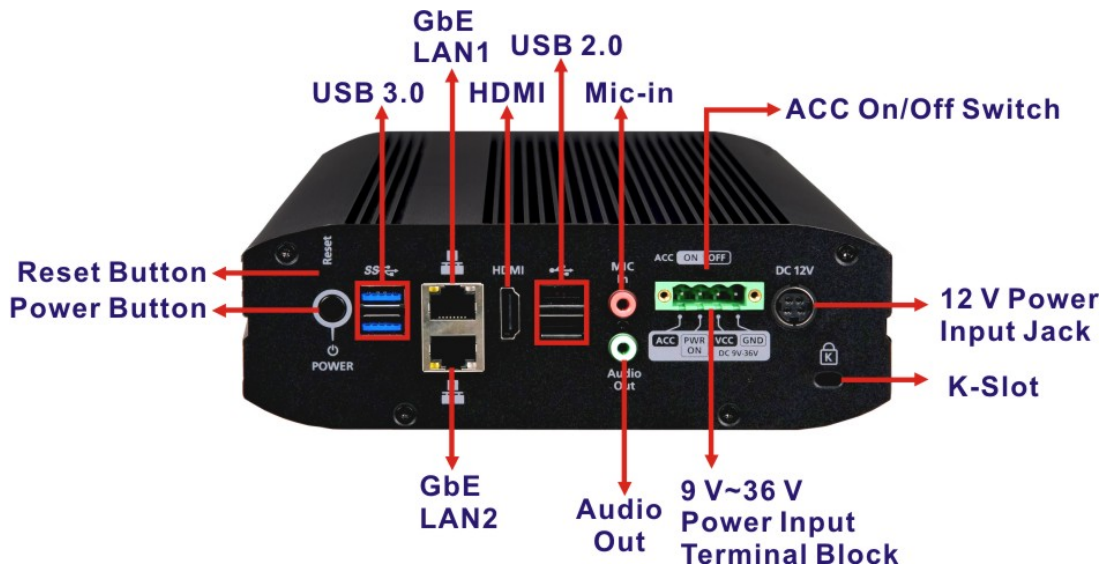


Figure 1-3: Rear Panel

1.6 Bottom Surface



WARNING:

Never remove the bottom access panel from the chassis while power is still being fed into the system. Before removing the bottom access panel, make sure the system has been turned off and all power connectors unplugged.

IS-453S-8G Industrial NAS

The bottom surface of the IS-453S-8G contains the retention screw holes for the VESA MIS-D 75 wall-mount kit and DIN mounting kit.

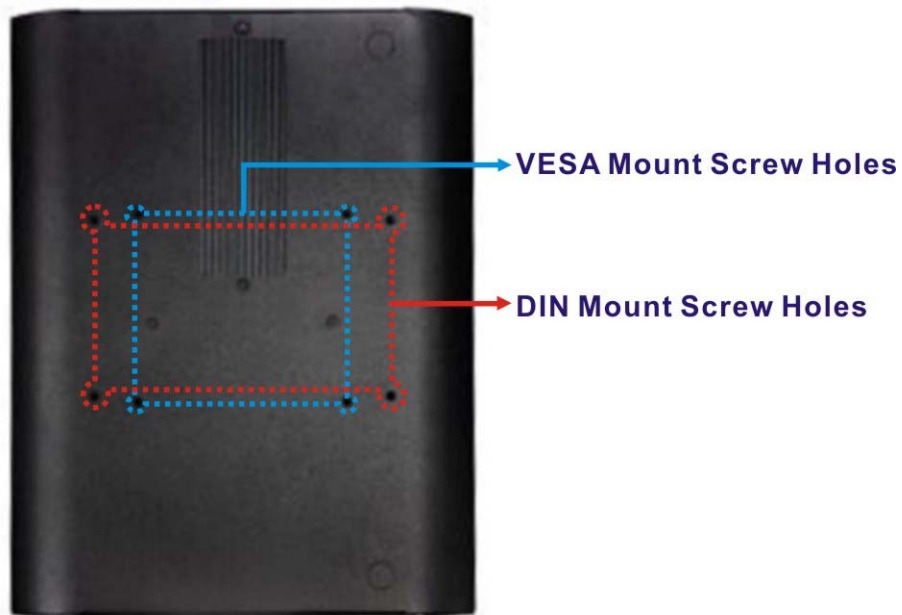


Figure 1-4: Bottom Surface

1.7 Hardware Specifications

The hardware specifications for the IS-453S-8G NAS are listed below.

	IS-453S-8G
CPU (SoC)	22nm Intel® Atom™ quad core processor (1.91 GHz)
System Memory	Preinstalled 8 GB (two 4 GB) DDR3L SDRAM SO-DIMM (system max. 8 GB)
Memory Slot	2 x 204-pin 1333/1600 MHz DDR3L SO-DIMM slots (For dual-DIMM configurations, you must use a pair of identical DDR3L modules.)
Flash Memory	512 MB

Floating Point Unit	Yes
Hardware Encryption	Yes (AES-NI)
GPU	7th generation Intel® HD Graphics
Ethernet	2 x RJ-45 gigabit Ethernet port
HDD	4 x 2.5" SATA SSD/HDD, hot-swappable
Display	1 x HDMI port (up to 1080p)
Audio	1 x Mic-in 1 x Audio out jack
USB	2 x USB 2.0 ports 2 x USB 3.0 ports
LED Indicators	1 x Status LED 1 x LAN LED 4 x HDD LED
Buttons	1 x Power button 1 x Reset button
Other Interface	1 x Kensington Security Slot
Alarm Buzzer	System warning
Fan	Fanless design
Power Supply	Power 1: DC power jack, external power adaptor, 12 V, 90 W, 100 V – 240 V input Power 2: 4-pin terminal block, 9 V – 36 V DC
Power Consumption	HDD sleep mode: 9.01 W In operation: 10.04 W S3 sleep: 0.82 W

IS-453S-8G Industrial NAS

Operating Temperature	-40°C – 50°C (-40°F ~ 122°F) Please note that industrial SSDs are required to meet this condition.
Humidity	5% – 95% RH non-condensing, wet bulb: 27°C
Color	Black
Mounting	Desktop Wall mount and DIN mount with optional mounting kits
Weight	Net weight: 1.11 kg (2.45 lbs) Gross weight: 3.2 kg (7.05 lbs)
Dimensions	59 (H) x 180 (W) x 247 (D) mm 2.32 (H) x 7.09 (W) x 9.72 (D) inch
EMC	FCC Class A, CE

Table 1-3: Hardware Specifications

1.8 Software Specifications

The software specifications for the IS-453S-8G NAS are listed below.

Operating System	QTS 4.2 (embedded Linux)
Volume Types	Single, JBOD, RAID 0, 1, 5, 6, 10, 5 + hot spare
Storage Management	Volume/LUN with thin provisioning and space reclaim, Online volume expansion, Online RAID capacity expansion, SSD read-only/read-write cache, AES 256-bit volume-based and shared folder data encryption, volume/LUN snapshots, SMART data migration
Storage Expansion	1 x QNAP UX-500P/UX-800P expansion unit
Supported Client OS	1. Windows 7 (32-/64-bit), Windows 8 (32-/64-bit), Windows Server 2003/2008 R2/2012/2012R2

	<p>2. Apple Mac OS X</p> <p>3. Linux & UNIX</p>
Supported Browsers	<p>Microsoft Internet Explorer 10+,</p> <p>Mozilla Firefox 8+,</p> <p>Apple Safari 4+, Google Chrome</p>
File System	<p>Internal Hard Drive: EXT4</p> <p>External Hard Drive: EXT3, EXT4, NTFS, FAT32, HFS+</p>
Networking Protocols	<p>CIFS/SMB, AFP, NFS, FTP, FTPS, SFTP, TFTP, HTTP(S), Telnet, SSH, iSCSI, SNMP, SMTP, VPN (PPTP, OpenVPN, L2TP), WebDAV, Rsync</p>
Surveillance Station	<p>Includes 4 free camera licenses, up to 40 camera channels via additional license purchase</p>
Backup	<p>Remote replication, Real-time remote replication (RTRR), Real-time & scheduled backup, Snapshot support for RTRR/Rsync, Desktop backup with QNAP NetBak Replicator for Windows®, Apple Time Machine backup support, Synchronizes with cloud storage: Amazon S3, ElephantDrive, Symform, Dropbox, and Google Drive, Third party backup software support: Acronis True Image, Arcserve backup, emc retrospect, Symantec Backup Exec, etc.</p>
Features	<p>File Station, Backup Station, FTP server, Web Server, Qsync, Notes Station, Print Server, VPN Server, VPN Client, Antivirus Protection, System Logs, Photo Station, Music Station, Video Station, Download Station (BT/HTTP/FTP), App Center, Hardware Accelerated Transcoding</p>
Mobile Apps	<p>Qfile, Qmanager, Qmusic, Qphoto, Qvideo, Qnotes, Qget, Qremote, Vmobile</p>

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Utilities	Qfinder, Qsync, NetBak Replicator, QGet, myQNAPcloud Connect, Qsnap
Language	English, Chinese (Traditional & Simplified), Czech, Danish, Dutch, Finnish, French, German, Greek, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese (Brazil), Romanian, Russian, Spanish, Swedish, Thai, Turkish
Qsirch	Supports full-text search, previews for photos, music, videos, Gmail, PDF etc., search Chrome extension
HD station	<p>Playback medias on TV with KODI via HDMI</p> <p>Watch online content such as YouTube, Flickr, Picasa, Shoutcast</p> <p>Supports QNAP Qremote app and the official KODI remote app</p> <p>Note:</p> <ul style="list-style-type: none"> - The playback and quality of some video files may be affected by the system's CPU and GPU decoding abilities. - Up to 7.1 channel audio passthrough is supported

Table 1-4: Software Specifications

1.9 Dimensions

The dimensions of the IS-453S-8G are listed below and shown in **Figure 1-5**.

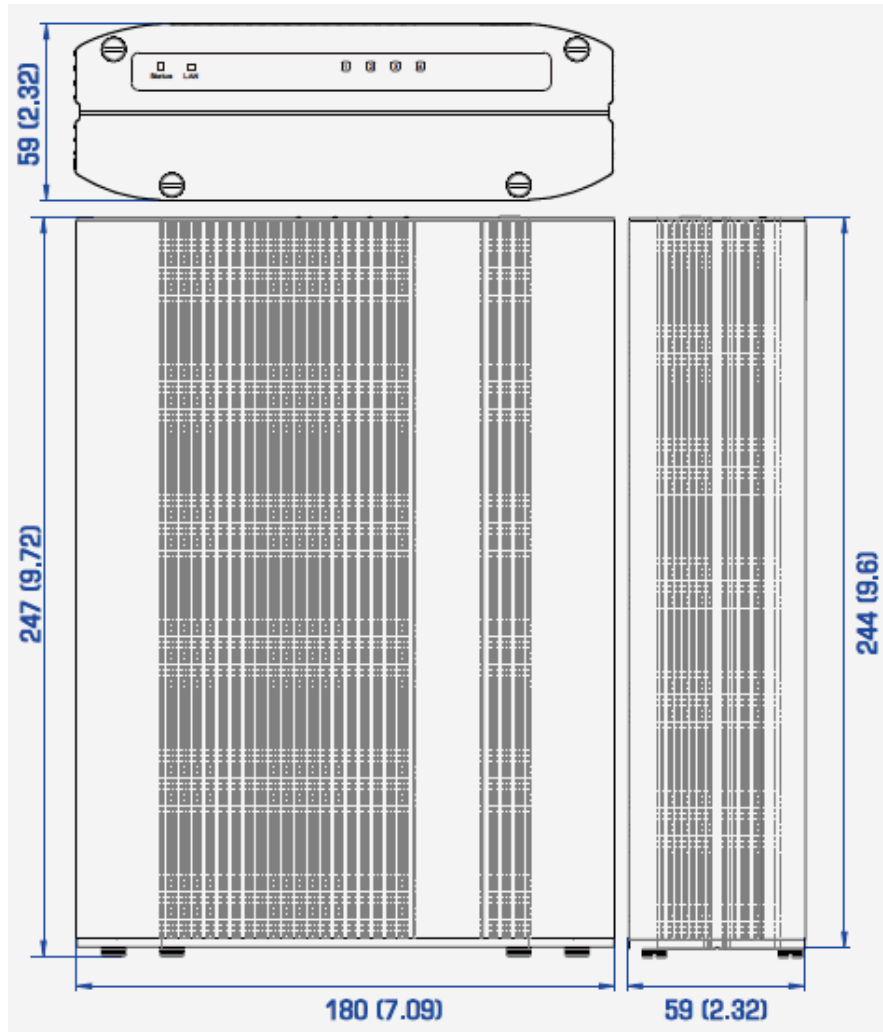


Figure 1-5: Dimensions (mm/inch)

Chapter

2

Unpacking

2.1 Unpacking

To unpack the industrial NAS, follow the steps below:

- Step 1:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the external (second) box.
- Step 2:** Open the external (second) box.
- Step 3:** Use box cutters, a knife or a sharp pair of scissors that seals the top side of the internal (first) box.
- Step 4:** Lift the system out of the boxes.
- Step 5:** Remove both polystyrene ends, one from each side.
- Step 6:** Make sure all the components listed in the packing list are present.


2.2 Packing List



NOTE:

If any of the components listed in the checklist below are missing, do not proceed with the installation. Contact the IEI reseller or vendor the IS-453S-8G was purchased from or contact an IEI sales representative directly by sending an email to sales@ieiworld.com.

The IS-453S-8G industrial NAS is shipped with the following components:

Quantity	Item	Image
1	IS-453S-8G industrial NAS	

IS-453S-8G Industrial NAS

2	Ethernet cable	
1	AC power adapter	
1	Power cord	
12	Flat head screws for HDD installation	
1	Quick Installation Guide	

Table 2-1: Package List

Chapter

3

Installation

3.1 Anti-static Precautions

**WARNING:**

Failure to take ESD precautions during the maintenance of the IS-453S-8G may result in permanent damage to the IS-453S-8G and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the WAFER series motherboard and the power module. (Dry climates are especially susceptible to ESD.) It is therefore critical that whenever the IS-453S-8G is opened and any electrical component handled, the following anti-static precautions are strictly adhered to.

- **Wear an anti-static wristband:** Wearing a simple anti-static wristband can help to prevent ESD from damaging the board.
- **Self-grounding:** Before handling the board, touch any grounded conducting material. During the time the board is handled, frequently touch any conducting materials that are connected to the ground.
- **Use an anti-static pad:** When configuring the IS-453S-8G, place it on an anti-static pad. This reduces the possibility of ESD damaging the IS-453S-8G.

3.2 Installation Precautions

During installation, be aware of the precautions below:

- **Read the user manual:** The user manual provides a complete description of the IS-453S-8G, installation instructions and configuration options.
- **DANGER! Disconnect Power:** Power to the IS-453S-8G must be disconnected during the installation process. Failing to disconnect the power may cause severe injury to the body and/or damage to the system.
- **Qualified Personnel:** The IS-453S-8G must be installed and operated only by trained and qualified personnel. Maintenance, upgrades, or repairs may

only be carried out by qualified personnel who are familiar with the associated dangers.

- **Air Circulation:** Make sure there is sufficient air circulation when installing the IS-453S-8G. The IS-453S-8G's cooling vents must not be obstructed by any objects. Blocking the vents can cause overheating of the IS-453S-8G. Leave at least 5 cm of clearance around the IS-453S-8G to prevent overheating.
- **Grounding:** The IS-453S-8G should be properly grounded. The voltage feeds must not be overloaded. Adjust the cabling and provide external overcharge protection per the electrical values indicated on the label attached to the back of the IS-453S-8G.

3.2.1 High Surface Temperature



WARNING:

Some surfaces of the equipment may become hot during operation.

The surface temperature may be up to several tens of degrees hotter than the ambient temperature. Under these circumstances, the equipment needs to be protected against accidental contact.

The equipment is intended for installation in a RESTRICTED ACCESS LOCATION.

- Access can only be gained by SERVICE PERSONS or by USERS who have been instructed about the reasons for the restrictions applied to the location and about any precautions that shall be taken.
- Access is through the use of a TOOL or lock and key, or other means of security, and is controlled by the authority responsible for the location.

3.3 Installation Procedure

To properly install the IS-453S-8G, the following steps must be followed. Detailed descriptions of these instructions are listed in the sections that follow.

Step 1: Unpacking

IS-453S-8G Industrial NAS

- Step 2:** Install the hard disk drive (HDD)
- Step 3:** Mount the IS-453S-8G
- Step 4:** Connect the Ethernet cable
- Step 5:** Connect peripheral devices
- Step 6:** Power the system up

3.4 Hard Drive Installation



NOTE:

Before installing hard drives, ensure the solid disk drives (SSDs) that you use are compatible with the NAS.

Four 2.5" SATA hard drives and/or solid disk drive (SSD) can be installed in the IS-453S-8G. To install the hard drive into the system, please follow the steps below.

- Step 1:** Remove all four screws from the front panel (**Figure 3-1**).

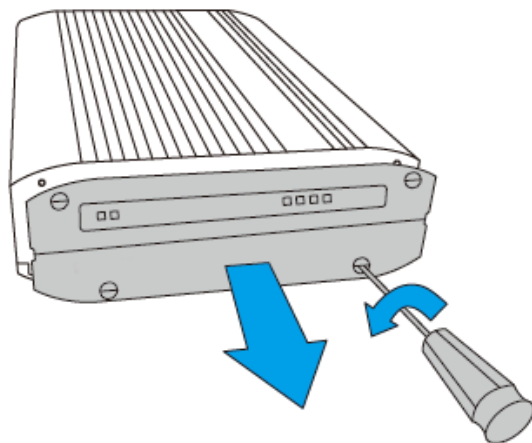


Figure 3-1: Front Panel Removal

- Step 2:** Remove the hard drive tray (**Figure 3-2**).

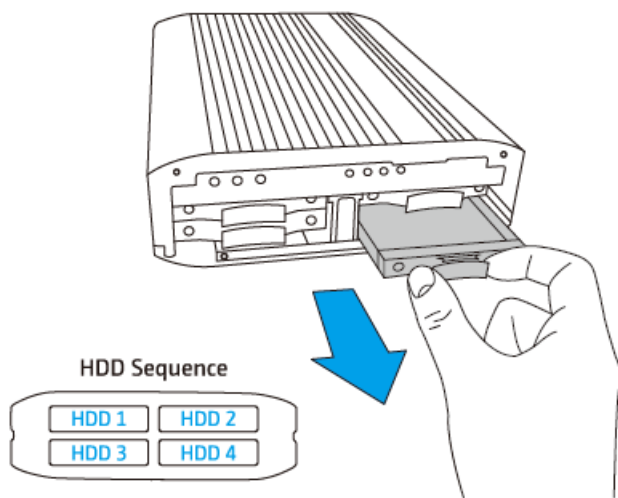


Figure 3-2: HDD Tray Removal

Step 3: Attach the drive to the tray and secure the four screws in the back of the drive tray (**Figure 3-3**).

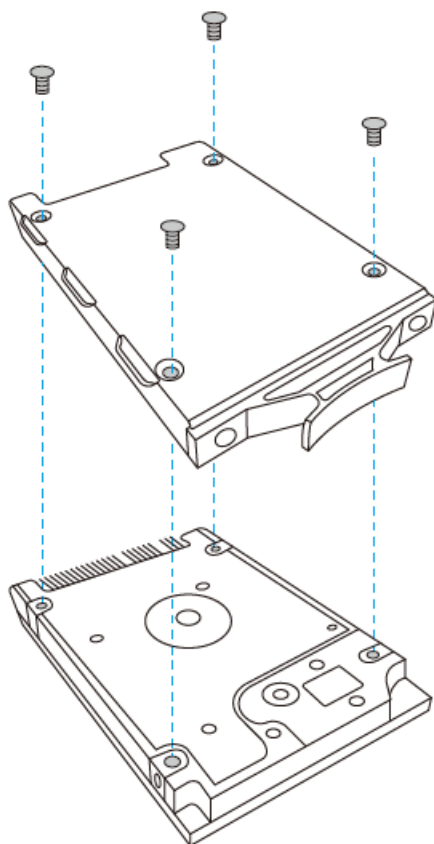


Figure 3-3: HDD Tray Installation

IS-453S-8G Industrial NAS

Step 4: Insert the drive tray into the NAS all the way to the end (**Figure 3-4**).

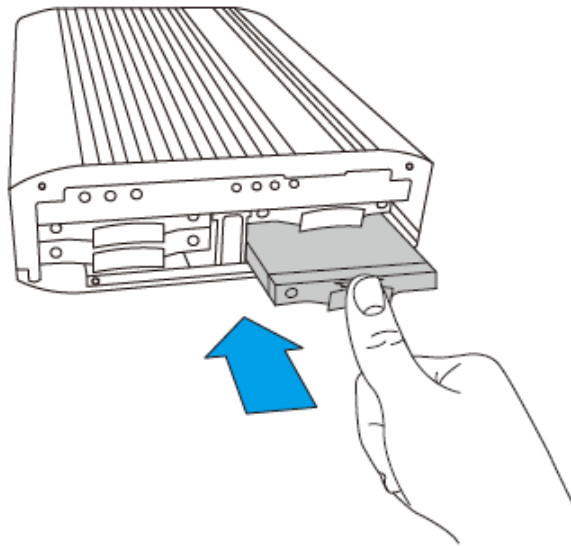


Figure 3-4: HDD Installation

Step 5: Repeat **Step 2** to **Step 4** to install the remaining drives. Please follow the HDD Sequence shown in **Step 2** to do so.

Step 6: Close the front panel and fasten the screws (**Figure 3-5**).

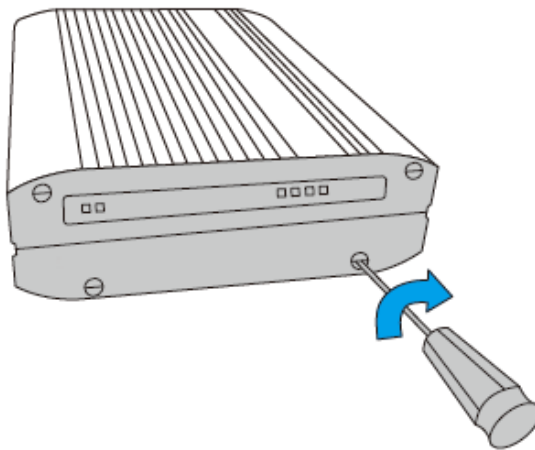


Figure 3-5: HDD Installation

3.4.1 Hot-swapping Hard Drives

The NAS supports hot-swapping the hard drives when 1 member drive crashes in RAID 1, 1–2 member drives crash in RAID 5 or RAID 6. Follow the steps below to hot-swap the hard drive when a member drive fails in a RAID configuration.

- Step 1:** Login the NAS and check the disk volume configuration in “Volume Management”.
- Step 2:** The volume status should be “in degraded mode”.
- Step 3:** Prepare a new hard drive to replace the failed one. The capacity of the new hard drive should be the same as or larger than the failed hard drive.
- Step 4:** Unplug the failed drive from the NAS. Wait for about 20 seconds or until the server beeps twice.
- Step 5:** Remove the failed drive from the drive tray.
- Step 6:** Install the new hard drive on the drive tray. Insert it to the NAS.
- Step 7:** The server should beep 1.5 seconds twice.
- Step 8:** Check the volume status on the web administration page. The volume should be rebuilding.

**WARNING:**

Users are strongly recommended to turn OFF the server before replacing the hard drive to reduce the risk of electric shock.

**CAUTION:**

IEI disclaims any responsibility for product damage/malfunction or data loss/recovery due to misuse or improper installation of hard disks in any occasions for any reasons.

Note that if a hard drive (new or used) which has never been installed on the NAS before it is installed, the hard drive will be formatted and partitioned automatically and all the disk data will be cleared.

3.5 RAID Recovery

The NAS supports exclusive RAID recovery technology to recover a failed RAID disk volume from unintentional disconnection or removal of the hard drives from the system. Using the RAID recovery, users can recover an inactive RAID 1, RAID 5, or RAID 6 volume to degraded mode, or an inactive RAID 0 and JBOD configuration to normal.

Disk volume	Supports RAID recovery	Maximum number of disk removal allowed
Single	No	-
JBOD	Yes	1 or more
RAID 0	Yes	1 or more
RAID 1	Yes	1 or 2
RAID 5	Yes	2 or more
RAID 6	Yes	3 or more
RAID 10	No	-

If the volume status is not active, users can install the same hard drives back to the same slots of the NAS. Then click “RECOVER” on the “Disk Management” → “Volume Management” page. Wait for about 60 seconds for the process to complete. When finished, the data can be accessed.



NOTE:

After recovering a RAID 1, RAID 5, or RAID 6 disk volume from not active to degraded mode by the RAID recovery, users can read or write the volume normally. The volume status will be recovered to normal after synchronization.

If the disconnected drive member is damaged, the RAID recovery function will not work.

	Standard RAID 5	QNAP RAID 5	Standard RAID 6	QNAP RAID 6
Degraded mode	N-1	N-1	N-1 & N-2	N-1 & N-2
Read only protection (for immediate data backup & hard drive replacement)	N/A	N-1, bad blocks found in the surviving drives of the array.	N/A	N-2, bad blocks found in the surviving drives of the array.
RAID recovery (RAID status: Not active)	N/A	If re-inserting all the original hard disk drives to the NAS and they can be spun up, identified, accessed, and the hard drive superblock is not damaged.	N/A	If re-inserting all the original hard disk drives to the NAS and they can be spun up, identified, accessed, and the hard drive superblock is not damaged).
RAID crash	N-2	N-2 failed hard drive and any of the remaining hard drives cannot be spun up or identified or accessed.	N-3	N-3 and any of the remaining hard drives cannot be spun up or identified or accessed.

N = Number of hard disk drives in the array

IS-453S-8G Industrial NAS

3.6 Mounting the System

Mounting instructions of the IS-453S-8G are given in the following sections. The mounting kits described below can be separately purchased. Please contact IEI sales representative directly for detail information. The mounting instructions are described below.

3.6.1 Mounting with Mounting Kit

To mount the industrial NAS onto a wall or some other surface using the optional mounting kit, please follow the steps below.

- Step 1:** Turn the industrial NAS over.
- Step 2:** Align the two retention screw holes in each bracket with the corresponding retention screw holes on the bottom surface.
- Step 3:** Secure the brackets to the system by inserting two retention screws into each bracket (**Figure 3-6**).

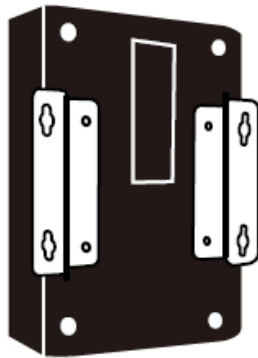


Figure 3-6: Mounting Bracket Installation

- Step 4:** Drill holes in the intended installation surface.
- Step 5:** Align the mounting holes in the sides of the mounting brackets with the predrilled holes in the mounting surface.
- Step 6:** Insert four retention screws, two in each bracket, to secure the system to the wall.

3.6.2 VESA Mounting

The IS-453S-8G is VESA (Video Electronics Standards Association) compliant and can be mounted on a mounting device with a 75 mm interface pad. The IS-453S-8G VESA mount retention screw holes are shown in **Figure 3-7**. Refer to the installation guide that came with the mounting device to mount the IS-453S-8G.

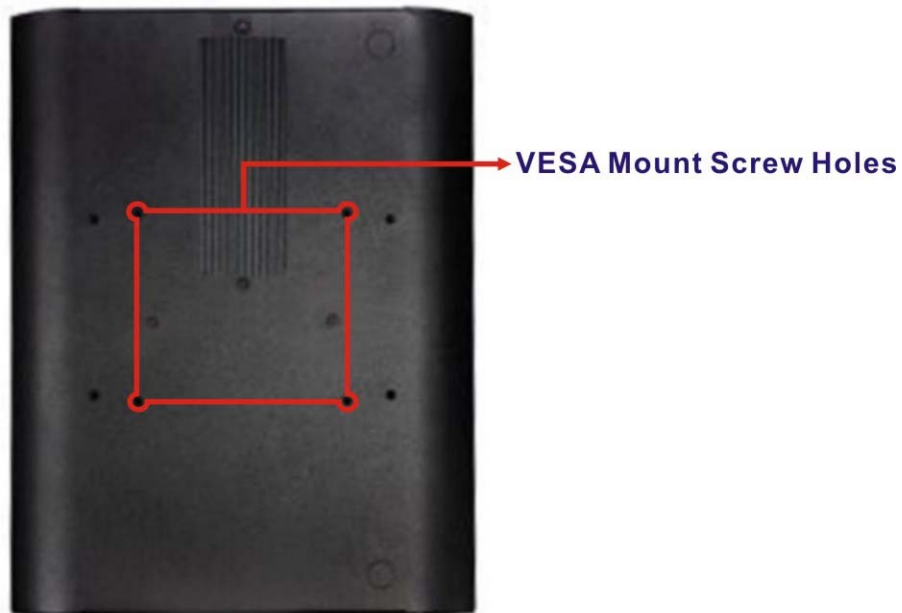


Figure 3-7: VESA Mount Retention Screw Holes



NOTE:

When purchasing the mounting device please ensure that it is VESA compliant and that the device has a 75 mm interface pad. If the mounting device is not VESA compliant it cannot be used to support the IS-453S-8G.

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3.7 Power-On Procedure

3.7.1 Installation Checklist



WARNING:

Make sure a power supply with the correct input voltage is being fed into the system. Incorrect voltages applied to the system may cause damage to the internal electronic components and may also cause injury to the user.

To power on the industrial NAS please make sure of the following:

- The HDD/SSD is installed
- The LAN cable is connected
- The power cables are plugged in
- The system is securely mounted

3.7.2 Terminal Block Pinouts

The IS-453S-8G has a 9 V – 36 V power input terminal block. The terminal block pinouts are shown in **Figure 3-8**.

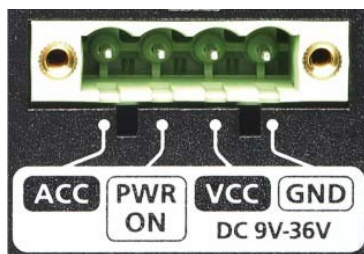


Figure 3-8: Terminal Block Pinouts

3.7.3 Power-on Procedure

To power-on the IS-453S-8G please follow the steps below:

- Step 1:** Connect the power source to the power input jack or the power input terminal block.
- Step 2:** Ensure the network cable is connected to the NAS and the orange and green indicators on its LAN port(s) are blinking. The NAS has to be connected to the same network as the PC.
- Step 3:** Push the power button (**Figure 3-10**).



Figure 3-9: Power Button and Power Input Connector

- Step 4:** Once turned on, the status LED indicator should turn to green (**Figure 3-10**).



Figure 3-10: Power LED

- Step 5:** To turn off the IS-453S-8G, press the power button for 1.5 seconds.
To force turn off, press the power button for 5 seconds.

IS-453S-8G Industrial NAS

3.8 Reset the System



Figure 3-11: Reset Button

Basic system reset (3 sec, 1 beep)

Press the reset button for 3 seconds, a beep sound will be heard. The following settings are reset to default:

- System administration password: admin
- TCP/IP configuration: Obtain IP address settings automatically via DHCP
- TCP/IP configuration: Disable Jumbo Frame
- TCP/IP configuration: If port trunking is enabled (dual LAN models only), the port trunking mode will be reset to “Active Backup (Failover)”.
- System Port: 8080 (system service port)
- Security Level: Low (Allow all connections)
- VLAN will be disabled

Advanced system reset (10 sec, 2 beeps)

Press the reset button for 10 seconds; you will hear two beeps at the third and the tenth seconds. The NAS will reset all the system settings to default as it does by web-based system reset in “Administration” → “Restore to Factory Default” except all the data are reserved. The settings such as the users, user groups, and the network share folders previously created will be cleared. To retrieve the old data after the advanced system reset, create the same network share folders on the NAS and the data will be accessible again.

3.9 Smart Installation Guide

Follow the steps in this section to complete online installation for your NAS:

- Step 1:** Go to <http://start.qnap.com>.
- Step 2:** Choose the number of HDD bays and the model of your NAS and click "Start Now".
- Step 3:** Click "Hardware" and follow the on-screen instructions to get hardware ready.
- Step 4:** Scroll down to "Install firmware" and click "Local Installation".
- Step 5:** Choose your operating system to download, install and run Qfinder.
- Step 6:** After installing Qfinder, launch it to search for your NAS. Double click on your NAS in Qfinder to start the Smart Installation Guide. Follow the on-screen instructions to the built-in Qfinder Setup Wizard will guide you along the way to complete the firmware installation.
- Step 7:** Proceed to log into QTS with your QTS account username and password to log in (QTS is the operating system for the Turbo NAS.)

3.10 Cloud Installation

Follow the steps in this section to complete cloud installation for your NAS:

- Step 1:** Connect your NAS to the Internet, and on your PC, go to "start.qnap.com" and scroll down until the "Install firmware" section. Click "Cloud Installation" and in the "Start Cloud Installation" step, click the "Start Cloud Installation" button. Alternatively, you may scan the QR code using your mobile phone to start cloud installation.
- Step 2:** Enter the cloud key (cloud key can be found from the sticker on top of your NAS) and click "Enter". Before proceeding to Step 4, activate your myQNAPcloud account after your account registration is confirmed (an email will be sent to the email address provided to create your myQNAPcloud account, and the account

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activation link will be included in that email.) For details, refer to myQNAPcloud Service chapter in this manual.

- Step 3:** Fill out all fields to register your myQNAPcloud account or sign in your myQNAPcloud account. Check "I agree to myQNAPcloud Terms of Use and QNAP Privacy Policy" and click "Next Step". If you already have a myQNAPcloud account, please select "Sign in myQNAPcloud account" and login with your account credentials.
- Step 4:** Type in the name of your Turbo NAS to register it and click "Register".
- Step 5:** Install a hard drive on your Turbo NAS if you have not already done so.
- Step 6:** Click "Begin" to install firmware on your Turbo NAS.
- Step 7:** Click "Start" to start the quick setup.
- Step 8:** Confirm all details and click "Proceed".
- Step 9:** Follow the onscreen instructions.
- Step 10:** Click "Connect and Login QTS".
- Step 11:** Key in the user ID and password to login your Turbo NAS.



NOTE:

If you encounter a "Device not found" message, ensure that:

1. your NAS has been powered on;
 2. the network cable is connected to the NAS and the orange and green indicators on its LAN port(s) are blinking; and
 3. the cloud key is correct.
-

3.11 HDMI Installation

Follow the steps in this section to complete the HDMI installation for your NAS:

Step 1: Connect the NAS to an HDMI display.

Step 2: Follow the onscreen instructions to complete the firmware installation.

Step 3: Choose to install HD Station or log into QTS with QTS account username and password (QTS is the operating system for the NAS.) The default login ID and password of the NAS are both "admin".

Chapter

4

Maintenance

**WARNING:**

The following instructions should only be performed by an authorized and trained technician.

Before starting, please ensure that you turn off the NAS, disconnect the power adaptor, network cable(s), and also remove any other device/cable that is attached to the NAS.

Take Anti-Static precautions whenever maintenance is being carried out on the system components. Failure to take anti-static precautions can cause permanent system damage. For more details on anti-static precautions, please refer to **Section 3.1**.

4.1 Component Replacement Procedure

**WARNING!**

Users are not advised to attempt to repair or replace any internal or external components of the IS-453S-8G industrial NAS other than those listed below. If any other components fail or need replacement, contact the IEI reseller or vendor you purchased the IS-453S-8G from or contact an IEI sales representative directly. To contact an IEI sales representative, please send an email to sales@ieiworld.com.

The industrial NAS components listed below can all be replaced if they fail:

- SO-DIMM module
- Internal hard disk drive (see **Section 3.4**)

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4.1.1 SO-DIMM Replacement



WARNING:

Using incorrectly specified SO-DIMM may cause permanent damage to the IS-453S-8G. Please make sure the purchased SO-DIMM complies with the memory specifications of the IS-453S-8G.

To replace a SO-DIMM memory module into a SO-DIMM socket, please follow the steps below.

Step 1: Loosen the four screws on the bottom and the two screws on the rear panel of the NAS with a Phillips screwdriver and lift the bottom off.



Figure 4-1: Bottom Panel Removal

Step 2: Pull the retention clips on each side so that the module tilts up for easy removal.
Remove installed memory modules (**Figure 4-2**).



Figure 4-2: Pull the Retention Clips on Each Side

Step 3: Slide the memory module to the slot at a 45-degree angle (approximately) and press the memory module down until it clips into place. Ensure the memory module sits properly with the clips in place.



Figure 4-3: SO-DIMM Installation

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**NOTE:**

Always ensure that a memory module is installed in the primary slot that is on the top (marked with “DIMM1”). If not, then the system will fail to start. When installing two memory modules, please ensure that they are the same size and ideally use the same type/model for both slots.



Step 4: Close the NAS bottom cover and fasten the screws (refer to **Step 1** for screw positions.) Re-connect the power and network cables to the NAS.

Appendix

A

Regulatory Compliance

DECLARATION OF CONFORMITY

This equipment is in conformity with the following EU directives:

- EMC Directive 2004/108/EC
- Low-Voltage Directive 2006/95/EC
- RoHS II Directive 2011/65/EU
- Ecodesign Directive 2009/125/EC

If the user modifies and/or install other devices in the equipment, the CE conformity declaration may no longer apply.

If this equipment has telecommunications functionality, it also complies with the requirements of the R&TTE Directive 1999/5/EC.

English

IEI Integration Corp declares that this equipment is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.

Български [Bulgarian]

IEI Integration Corp. декларира, че този оборудване е в съответствие със съществените изисквания и другите приложими правила на Директива 1999/5/EC.

Česky [Czech]

IEI Integration Corp tímto prohlašuje, že tento zařizení je ve shodě se základními požadavky a dalšími příslušnými ustanoveními směrnice 1999/5/ES.

Dansk [Danish]

IEI Integration Corp erklærer herved, at følgende udstyr overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.

Deutsch [German]

IEI Integration Corp, erklärt dieses Gerät entspricht den grundlegenden Anforderungen und den weiteren entsprechenden Vorgaben der Richtlinie 1999/5/EU.

Eesti [Estonian]

IEI Integration Corp deklareerib seadme seadme vastavust direktiivi 1999/5/EÜ põhinõuetele ja nimetatud direktiivist tulenevatele teistele asjakohastele sätetele.

Español [Spanish]

IEI Integration Corp declara que el equipo cumple con los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.

Ελληνική [Greek]

IEI Integration Corp ΔΗΛΩΝΕΙ ΟΤΙ ΕΞΟΠΛΙΣΜΟΣ ΣΥΜΜΟΡΦΩΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΩΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/EK.

Français [French]

IEI Integration Corp déclare que l'appareil est conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.

Italiano [Italian]

IEI Integration Corp dichiara che questo apparecchio è conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.

Latviski [Latvian]

IEI Integration Corp deklarē, ka iekārta atbilst būtiskajām prasībām un citiem ar to saistītajiem noteikumiem Direktīvas 1999/5/EK.

Lietuvių [Lithuanian]

IEI Integration Corp deklaruoja, kad šis įranga atitinka esminius reikalavimus ir kitas 1999/5/EB Direktyvos nuostatas.

Nederlands [Dutch]

IEI Integration Corp dat het toestel toestel in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 1999/5/EG.

Malti [Maltese]

IEI Integration Corp jiddikjara li dan prodott jikkonforma mal-ħtiġijiet essenzjali u ma provvedimenti oħrajn relevanti li hemm fid-Dirrettiva 1999/5/EC.

Magyar [Hungarian]

IEI Integration Corp nyilatkozom, hogy a berendezés megfelel a vonatkozó alapvető követelményeknek és az 1999/5/EC irányelv egyéb előírásainak.

Polski [Polish]

IEI Integration Corp oświadcza, że wyrobu jest zgodny z zasadniczymi wymogami oraz pozostałymi stosownymi postanowieniami Dyrektywy 1999/5/EC.

Português [Portuguese]

IEI Integration Corp declara que este equipamento está conforme com os requisitos essenciais e outras disposições da Directiva 1999/5/CE.

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Româna [Romanian]

IEI Integration Corp declară că acest echipament este în conformitate cu cerințele esențiale și cu celelalte prevederi relevante ale Directivei 1999/5/CE.

Slovensko [Slovenian]

IEI Integration Corp izjavlja, da je ta opreme v skladu z bistvenimi zahtevami in ostalimi relevantnimi določili direktive 1999/5/ES.

Slovensky [Slovak]

IEI Integration Corp týmto vyhlasuje, že zariadenia spĺňa základné požiadavky a všetky príslušné ustanovenia Smernice 1999/5/ES.

Suomi [Finnish]

IEI Integration Corp vakuuttaa täten että laitteet on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.

Svenska [Swedish]

IEI Integration Corp förklarar att denna utrustningstyp står i överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.

FCC WARNING

This equipment complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- 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.

Federal Communication Commission Interference Statement

This equipment has been assembled with components that comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Appendix

B

Safety Precautions

**WARNING:**

The precautions outlined in this chapter should be strictly followed. Failure to follow these precautions may result in permanent damage to the IS-453S-8G.

B.1 Safety Precautions

Please follow the safety precautions outlined in the sections that follow:

B.1.1 General Safety Precautions

Please ensure the following safety precautions are adhered to at all times.

- **Follow the electrostatic precautions** outlined below whenever the IS-453S-8G is opened.
- **Make sure the power is turned off and the power cord is disconnected** whenever the IS-453S-8G is being installed, moved or modified.
- **Do not apply voltage levels that exceed the specified voltage range.** Doing so may cause fire and/or an electrical shock.
- **Electric shocks can occur** if the IS-453S-8G chassis is opened when the IS-453S-8G is running.
- **Do not drop or insert any objects** into the ventilation openings of the IS-453S-8G.
- **If considerable amounts of dust, water, or fluids enter the IS-453S-8G,** turn off the power supply immediately, unplug the power cord, and contact the IS-453S-8G vendor.
- **DO NOT:**
 - Drop the IS-453S-8G against a hard surface.
 - In a site where the ambient temperature exceeds the rated temperature

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B.1.2 Anti-static Precautions



WARNING:

Failure to take ESD precautions during the installation of the IS-453S-8G may result in permanent damage to the IS-453S-8G and severe injury to the user.

Electrostatic discharge (ESD) can cause serious damage to electronic components, including the IS-453S-8G. Dry climates are especially susceptible to ESD. It is therefore critical that whenever the IS-453S-8G is opened and any of the electrical components are handled, the following anti-static precautions are strictly adhered to.

- ***Wear an anti-static wristband:*** Wearing a simple anti-static wristband can help to prevent ESD from damaging any electrical component.
- ***Self-grounding:*** Before handling any electrical component, touch any grounded conducting material. During the time the electrical component is handled, frequently touch any conducting materials that are connected to the ground.
- ***Use an anti-static pad:*** When configuring or working with an electrical component, place it on an anti-static pad. This reduces the possibility of ESD damage.
- ***Only handle the edges of the electrical component:*** When handling the electrical component, hold the electrical component by its edges.

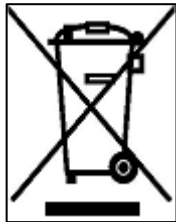
B.1.3 Product Disposal

**CAUTION:**

Risk of explosion if battery is replaced by and incorrect type. Only certified engineers should replace the on-board battery.

Dispose of used batteries according to instructions and local regulations.

- Outside the European Union - If you wish to dispose of used electrical and electronic products outside the European Union, please contact your local authority so as to comply with the correct disposal method.
- Within the European Union:



EU-wide legislation, as implemented in each Member State, requires that waste electrical and electronic products carrying the mark (left) must be disposed of separately from normal household waste. This includes monitors and electrical accessories, such as signal cables or power cords.

When you need to dispose of your display products, please follow the guidance of your local authority, or ask the shop where you purchased the product. The mark on electrical and electronic products only applies to the current European Union Member States.

Please follow the national guidelines for electrical and electronic product disposal.

B.2 Maintenance and Cleaning Precautions

When maintaining or cleaning the IS-453S-8G, please follow the guidelines below.

B.2.1 Maintenance and Cleaning

Prior to cleaning any part or component of the IS-453S-8G, please read the details below.

- The interior of the IS-453S-8G does not require cleaning. Keep fluids away from the IS-453S-8G interior.

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- Be cautious of all small removable components when vacuuming the IS-453S-8G.
- Turn the IS-453S-8G off before cleaning the IS-453S-8G.
- Never drop any objects or liquids through the openings of the IS-453S-8G.
- Be cautious of any possible allergic reactions to solvents or chemicals used when cleaning the IS-453S-8G.
- Avoid eating, drinking and smoking within vicinity of the IS-453S-8G.

B.2.2 Cleaning Tools

Some components in the IS-453S-8G may only be cleaned using a product specifically designed for the purpose. In such case, the product will be explicitly mentioned in the cleaning tips. Below is a list of items to use when cleaning the IS-453S-8G.

- **Cloth** – Although paper towels or tissues can be used, a soft, clean piece of cloth is recommended when cleaning the IS-453S-8G.
- **Water or rubbing alcohol** – A cloth moistened with water or rubbing alcohol can be used to clean the IS-453S-8G.
- **Using solvents** – The use of solvents is not recommended when cleaning the IS-453S-8G as they may damage the plastic parts.
- **Vacuum cleaner** – Using a vacuum specifically designed for computers is one of the best methods of cleaning the IS-453S-8G. Dust and dirt can restrict the airflow in the IS-453S-8G and cause its circuitry to corrode.
- **Cotton swabs** - Cotton swaps moistened with rubbing alcohol or water are excellent tools for wiping hard to reach areas.
- **Foam swabs** - Whenever possible, it is best to use lint free swabs such as foam swabs for cleaning.

Appendix

C

Hazardous Materials Disclosure

C.1 Hazardous Materials Disclosure Table for IPB Products Certified as RoHS Compliant Under 2002/95/EC Without Mercury

The details provided in this appendix are to ensure that the product is compliant with the Peoples Republic of China (China) RoHS standards. The table below acknowledges the presences of small quantities of certain materials in the product, and is applicable to China RoHS only.

A label will be placed on each product to indicate the estimated “Environmentally Friendly Use Period” (EFUP). This is an estimate of the number of years that these substances would “not leak out or undergo abrupt change.” This product may contain replaceable sub-assemblies/components which have a shorter EFUP such as batteries and lamps. These components will be separately marked.

Please refer to the table on the next page.

Part Name	Toxic or Hazardous Substances and Elements					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (CR(VI))	Polybrominated Biphenyls (PBB)	Polybrominated Diphenyl Ethers (PBDE)
Housing	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Display	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Printed Circuit Board	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Metal Fasteners	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Cable Assembly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fan Assembly	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Power Supply Assemblies	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Battery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

O: This toxic or hazardous substance is contained in all of the homogeneous materials for the part is below the limit requirement in SJ/T11363-2006

X: This toxic or hazardous substance is contained in at least one of the homogeneous materials for this part is above the limit requirement in SJ/T11363-2006

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此附件旨在确保本产品符合中国 RoHS 标准。以下表格标示此产品中某有毒物质的含量符合中国 RoHS 标准规定的限量要求。

本产品上会附有“环境友好使用期限”的标签，此期限是估算这些物质“不会有泄漏或突变”的年限。本产品可能包含有较短的环境友好使用期限的可替换元件，像是电池或灯管，这些元件将会单独标示出来。

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (CR(VI))	多溴联苯 (PBB)	多溴二苯 醚 (PBDE)
壳体	O	O	O	O	O	O
显示	O	O	O	O	O	O
印刷电路板	O	O	O	O	O	O
金属螺帽	O	O	O	O	O	O
电缆组装	O	O	O	O	O	O
风扇组装	O	O	O	O	O	O
电力供应组装	O	O	O	O	O	O
电池	O	O	O	O	O	O

O: 表示该有毒有害物质在该部件所有物质材料中的含量均在 SJ/T11363-2006 标准规定的限量要求以下。
X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T11363-2006 标准规定的限量要求。