i series 400i

Hardware Installation and Operation Guide

nexsan TECHNOLOGIES

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Regulatory Information

FCC-15 User Information

The i series 400i has been tested and found to comply with the limits of the 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 i series 400i is operated in a commercial environment. The i series 400i 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 the radio communications. Operation of the i series 400i in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at the user's own expense.

Warning per EN 55022

The i series 400i is a Class A product. In a domestic environment, this product may cause radio interference, in which case the user may be required to take adequate measures.

Safety Notices

Read and understand the following notices before installing the i series 400i.

- The power plug must be accessible at all times because it serves as the main disconnecting vehicle.
- Unplug the i series 400i power cord before performing maintenance procedures.
- The i series 400i contains two power supply units. To disconnect the i series 400i completely, all power supply cords must be unplugged.
- Do not touch the power supplies when their power cords are connected. Line voltages are present within the power supplies when their cords are connected.
- The safety cover is an integral part of this product. Do not operate the unit without the safety cover firmly in place. Operating the unit without the cover in place will invalidate the safety approvals and pose a risk of fire and electrical hazards.
- This product relies on the building's wiring for short-circuit (overcurrent) protection. Ensure that a fuse or circuit breaker no larger than 120 VAC, 15a U.S. (240 VAC, 10A international) is used on the phase conductors (all current-carrying conductors).
- The i series 400i is intended to be grounded. Ensure that the i series 400i is connected to earth ground during normal use.
- When installing the i series 400i, the ground connection must always be connected first and disconnected last.
- The power supply that the i series 400i is connected to must have a circuit breaker.
- There is a danger of explosion if the motherboard battery is replaced incorrectly. Replace the battery with the same or an equivalent type as recommended by the manufacturer. Dispose of the used battery according to the manufacturer's instructions.
- The working temperature for the i series 400i is 32° to 122° F (0° to 50° C). When operating the i series 400i in close proximity to other products that might influence the i series 400i temperature, ensure that its temperature remains within the normal operating range.
- Do not block or hinder airflow to the fans or ventilation holes.
- Use of controls or adjustment of procedures other than those specified herein may result in hazardous radiation exposure.

Contents

Figures

Tables

1 About this Guide

This guide provides hardware installation instructions for mounting the i series 400i. The section 'Getting Started' on page 16 provides step-by-step instructions for the basic initial configuration for the i series 400i operating with the i series manager in a SAN environment.

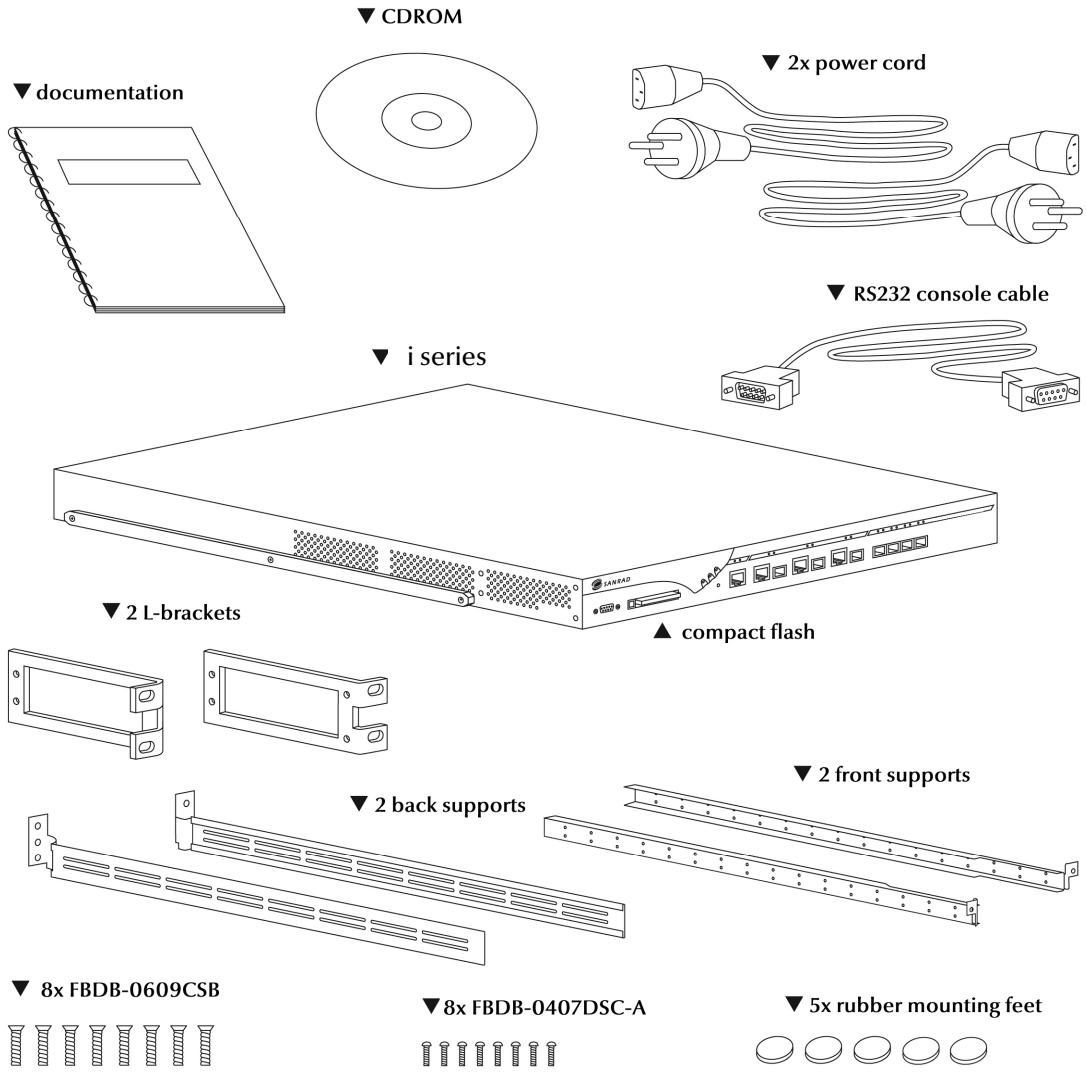
This guide is intended as a supplement to the additional configuration information described in the i series 400i User Manuals provided on the CDROM. The most recent documentation and release notes can be obtained from **http://www.nexsan.com**.

2 Before You Begin

Before you begin to install the i series 400i, follow these steps:

1. Unpack and remove the i series 400i and accessory kit from the shipping box.
2. Save the packing material and box for future use.
3. Verify that you have received all the items listed in Shipping Box Contents, page 2. If any item is missing or damaged, contact your NEXSAN distributor for instructions.

Shipping Box Contents



Additional Necessary Hardware and Tools (not supplied)

Additionally, you will need the following to rack-mount the i series 400i:

- Rack-post screw suitable for the equipment rack.
- Philips screwdrivers suitable for all the screws.

3 Mounting the i series 400i

The i series 400i can be surface or rack mounted in a 19-inch rack.

- Rack mounting the i series 400i is described in *Rack Mounting*, page 3.
- Mounting the i series 400i on a flat surface is described in
- *Surface* Mounting, page 8.

Rack Mounting

In order to rack mount the i series 400i, you must:

1. Attach the L-brackets to the i series 400i, described on page 3.
2. Assemble Rack Mount Side Supports, described on page 4.
3. Attach Rack Mount Side Supports to Rack, described on page 6.
4. Insert the i series 400i into the Rack, described on page 7.
5. Attach the i series 400i to the Rack, described on page 8.

Attach the L-brackets to the i series 400i

1. Place the i series 400i right side up on a secure flat surface.
2. Use the eight screws (FBDB-0609CSB) included in the accessory packet to attach the L-brackets to the chassis.

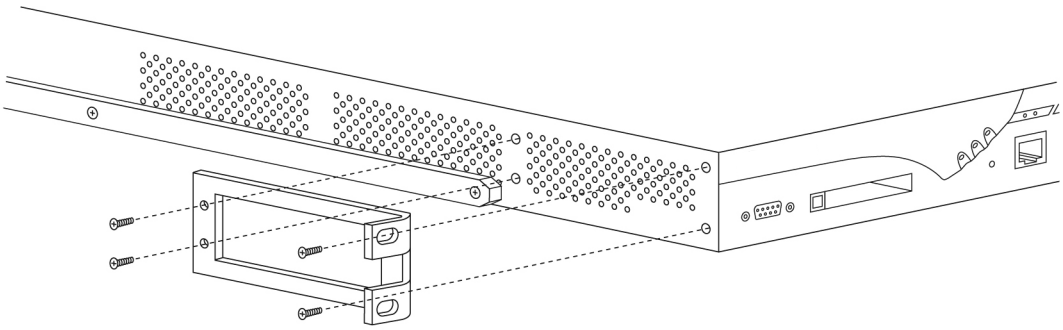


Figure 1. Attaching L-Brackets to i series 400i

Assemble Rack Mount Side Supports

You must adjust the side rack mount supports to fit the depth of your rack. Each side support consists of a front and a back piece.

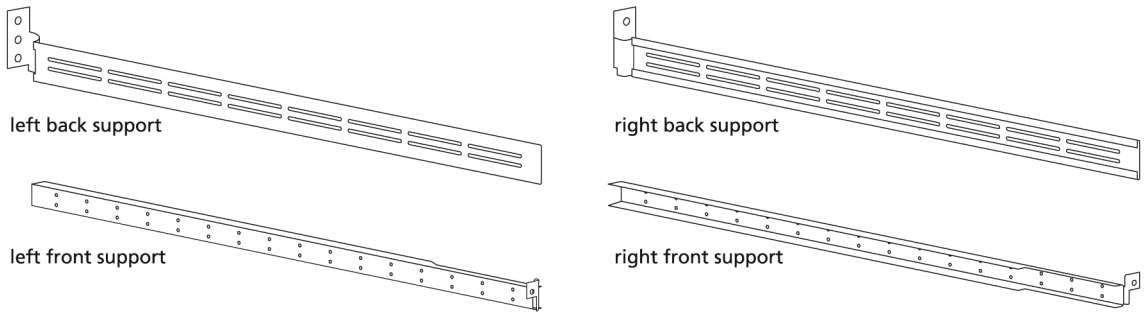


Figure 2. Side Rack Mount Supports

Note:

The parts are different for the right and left sides. The following steps are illustrated for the right side. After screwing the two right side pieces together, you must perform the same steps for the left side.

Determine the length for side rack supports as follows:

1. Determine the length of the side support by aligning the two pieces of the side mount with the rack as shown in Figure 3.
2. Adjust length so that:
   - The front side support is flush against (behind) the rack as shown in A (Figure 3).
   - The back side support is flush against (behind) the rack as shown in B (Figure 3).

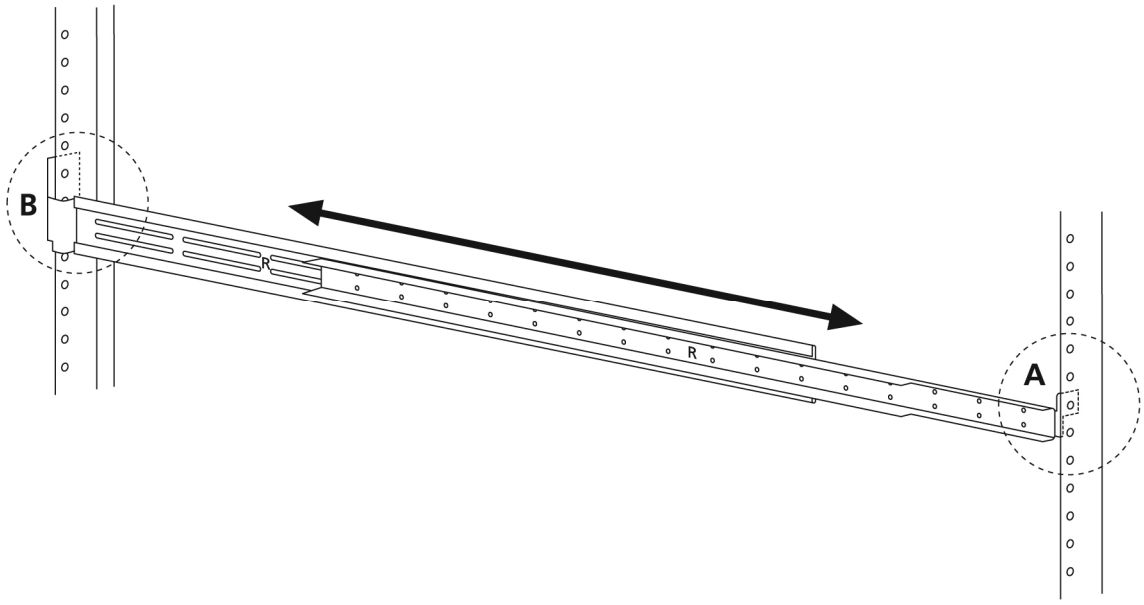


Figure 3. Determining Length of Side Rack Supports

3. Hold the two pieces together and carefully remove the adjusted side supports while rotating the pieces so that the screws can be inserted as shown in Figure 4.

> **Note:**
> *The screws are inserted through the back support piece into the front support piece.*

4. Insert screws (FBDB-0407DSC-A) in the holes (farthest ones on each end) as shown in Figure 4.

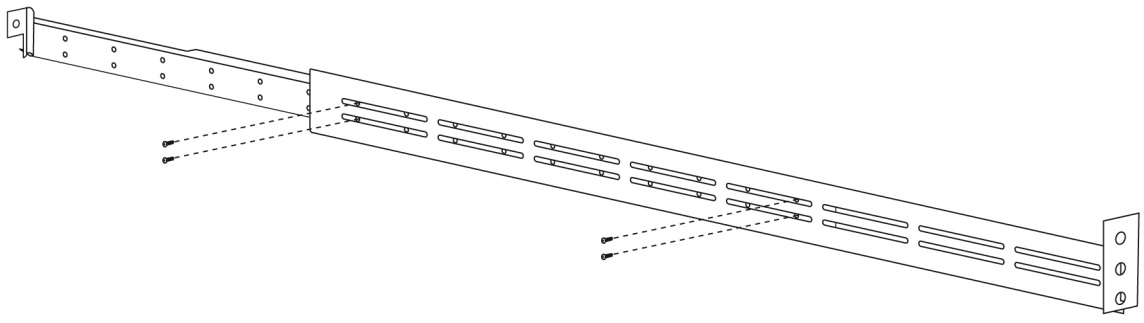


Figure 4. Screwing Side Rack Support Pieces Together

Attach Rack Mount Side Supports to Rack

1. Using screws that you provide, attach the right-side support to the rack as shown in Figure 5.
2. Do the same for the left-side support.

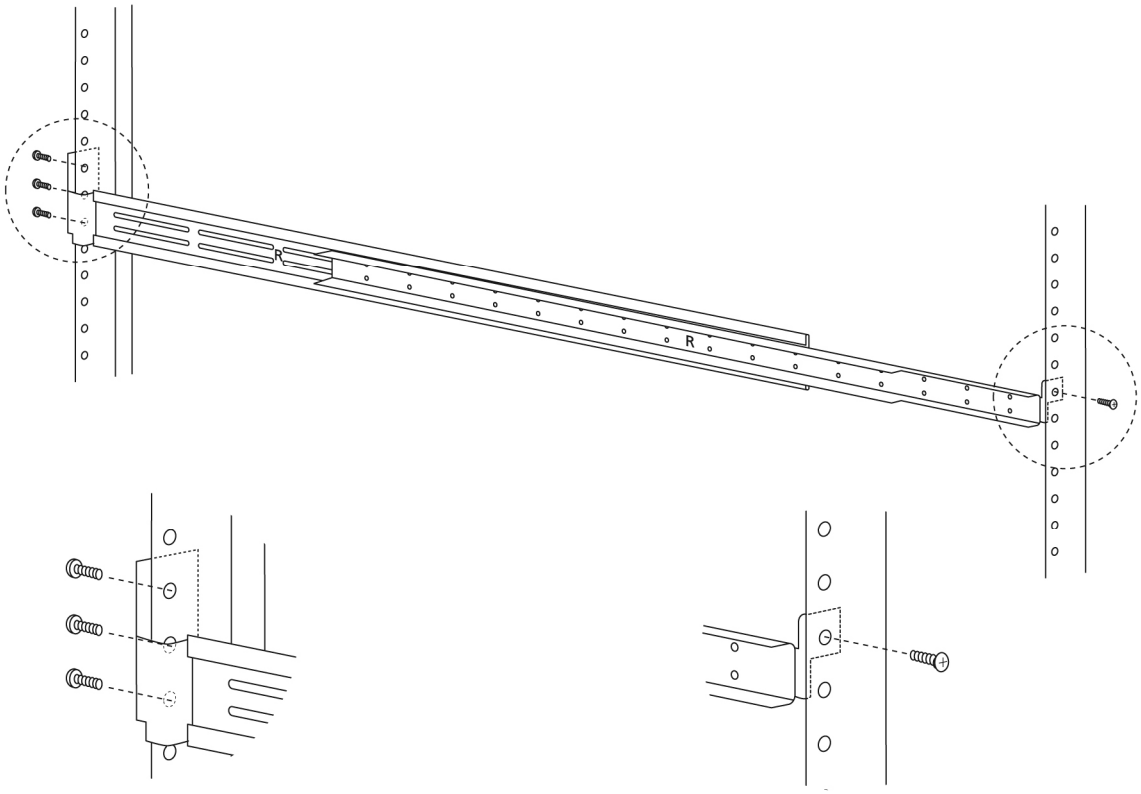


Figure 5. Screwing Side Supports to Rack

Insert the i series 400i into the Rack

> **Note:**
> *If the i series 400i was previously mounted on a table or shelf, remove the rubber feet on the bottom of the i series 400i.*

1. Slide the i series 400i into the rack (Figure 6).
2. Check that the i series 400i is level.

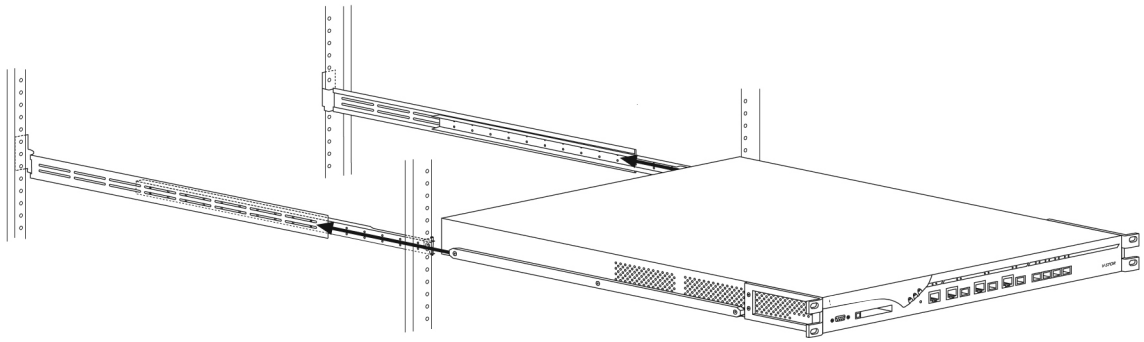


Figure 6. Inserting i series 400i into Rack

Attach the i series 400i to the Rack

- Using screws that you supply, attach the i series 400i to the rack as shown in Figure 7.

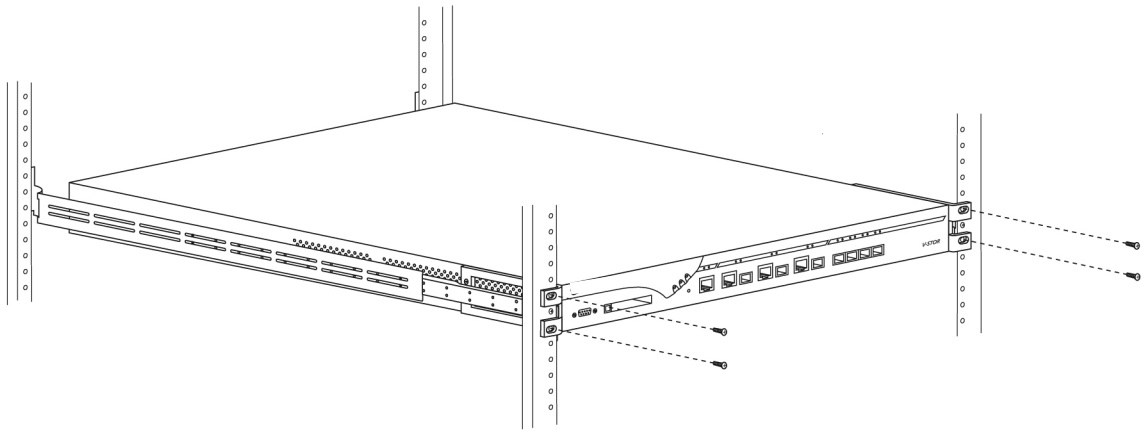


Figure 7. Attaching i series 400i to Rack

Surface Mounting

The i series 400i can be mounted on any secure flat surface. The i series 400i hardware kit contains five rubber feet for surface mounting.

- Attach the rubber feet to the designated places marked on the bottom of the i series 400i.

4 i series 400i

This section describes the i series 400i Port Connections and LEDs, how to power up the i series 400i as well as how to replace a power supply.

Front Panel

Figure 8 shows the i series 400i Front Panel.

1. RS232 Console Port
2. Removable Compact Flash (CF) slot
3. One 10/100 Management Port
4. Three 1 Gb Ethernet Network Ports (both copper and Fibre Optic interfaces)
5. Four FC interfaces (SFP)
6. System Indicator LEDs

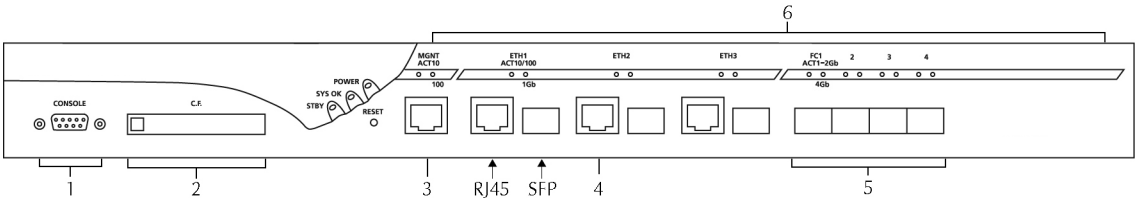


Figure 8. i series 400i Front Panel

Back Panel

Figure 9 shows the i series 400i Back Panel.

1. Fault tolerant fans (N +1)
2. Two removable auto-switch 100V/240V AC redundant power supplies

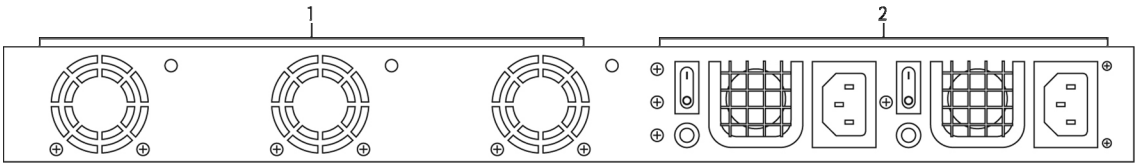


Figure 9. i series 400i Back Panel

System Indicator LEDs

The i series 400i Indicator LEDs are located on the front of the i series 400i. Their functionality is listed in Table 1.

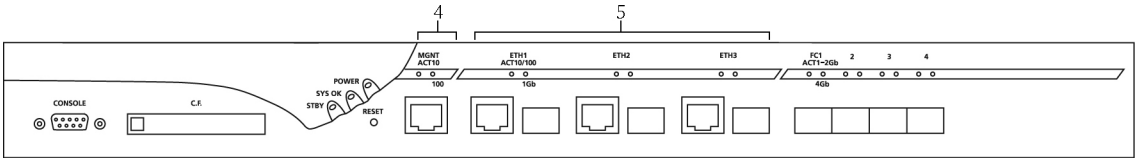


Figure 10. i series 400i LEDs

Table 1. i series 400i Indicator LEDs

No	LED	Status Indication	Color
1	Power	All power supplies functioning	Green
2	SYS OK	All systems functioning properly	Green
3	STBY	System is in standby mode	Green
4	MGNT	Management port	
	■ ACT	Slow blink: port is active Fast blink: there is port traffic	Green
	■ 10/100	LED color indicates port operating speed.	Green: 10 Mbps Orange: 100 Mbps
5	ETH	Network Ethernet Ports	
	■ ACT	Slow blink: port is active Fast blink: there is port traffic	Green
	■ 10/100 1Gb	LED color indicates port operating speed	Green: 10/100 Mbps Orange: 1 Gb
6	FC	FC Storage ports	
	■ ACT	FC port is active	Green
	■ 1-2Gb/4Gb	LED color indicates port operating speed	Green: 1-2 Gb Orange: 4 Gb

Storage Port Connection

Connect the FC storage devices or FC Switch to the i series 400i using the FC storage ports. The storage ports are located on front of the i series 400i. The i series 400i supports four storage ports.

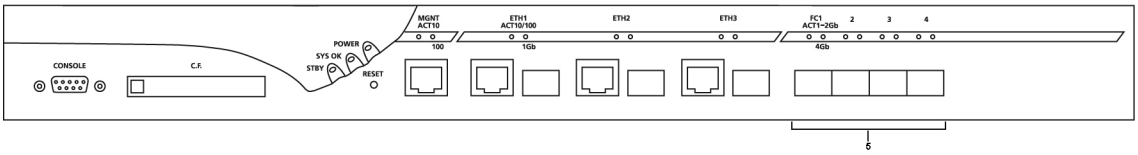


Figure 11. i series 400i Storage Ports

Note:

To connect a fiber optic or copper cable you need a Small Form Factor Pluggable (SFP) transceiver to couple to the cable and insert into the network SFP port.

Table 2. Storage Port Connection Types

FC Connector	Length	Type
Fiber Channel 1 Gbit/2 Gbit SFP		
• Short-Wave laser for multimode fiber	Up to 550m	SW SFP
• Long-Wave laser for single-mode fiber	Up to 10km	LW SFP
• Copper 1 Gbit	Up to 25m	Copper SFP
• Copper 2 Gbit	Up to 12.5m	Copper SFP

Network Port Connection

The network ports (ETH1, ETH2 & ETH3) are located on the front of the i series 400i.

Each network port has both a fiber optic and copper connector. However, only one cable (fiber optic or copper) can be connected to each port.

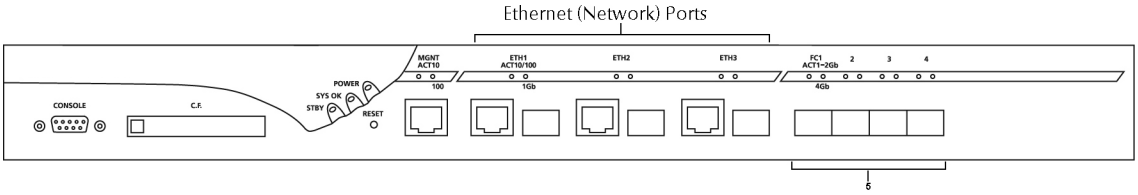


Figure 12. i series 400i Network Ports

Note:

Each network port has both a fiber optic and copper connector. You cannot use both types (copper and SFP) at the same time.

On power up, the i series 400i automatically detects the connection type that is present in the port. In the event that both types are present, the i series 400i will use the SFP connection.

If you want to use copper and an SFP connection exists, you must break the SFP connection. Removing the Fibre Optic cable from the SFP connector is not enough to break the connection. You must also remove the SFP transceiver from the connector.

The network ports support all of the following:

Table 3. Network Port Cable Connections

Cable	Length	Type
1000BASE-SX Short-wave laser for multimode fiber	275m to 550m	SW SFP
1000BASE-LX Long-wave laser for single mode fiber	Up to 10km	LW SFP
1000BASE-TX (twisted-pair) over Category 5 UTP	Up to 100m	RJ45

Console Port Connection

The console port is located on the front left of the i series 400i. Connect the i series 400i to a console or dumb terminal with the included serial cable (male-female straight cable).

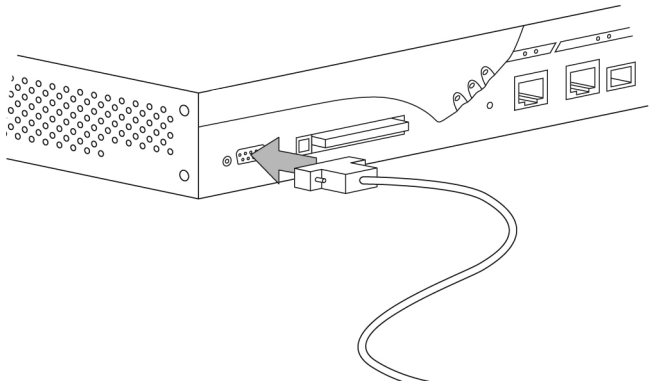


Figure 13. i series 400i Console Port

Management Port Connection

The management port, labeled 10/100 MGNT, is located on the front of the i series 400i. Use the MGNT port to connect a host station either directly or via a network to the i series 400i.

- When connecting directly to the i series 400i via the MGNT port (10/100), use a male-female straight cable.
- When connecting via a network, use a standard network cable.

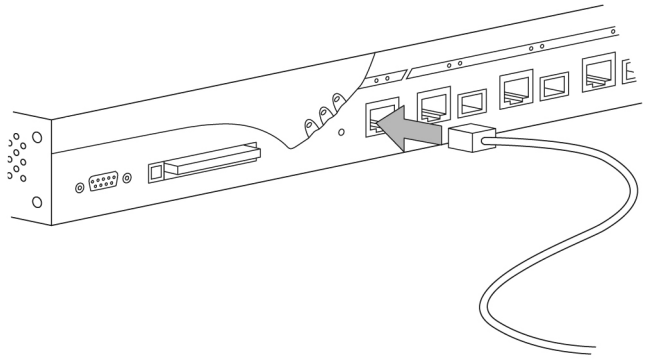


Figure 14. i series 400i Management Port Connection

Compact Flash (CF) Slot

The compact flash slot is located on the front of the i series 400i. You can configure the i series 400i to mirror copy the configuration database to the compact flash. This copy is used for configuration recovery.

Note:
In order for the configuration database to be mirror copied to the compact flash, you must configure the i series 400i by running the CLI command: `system set -rep yes`

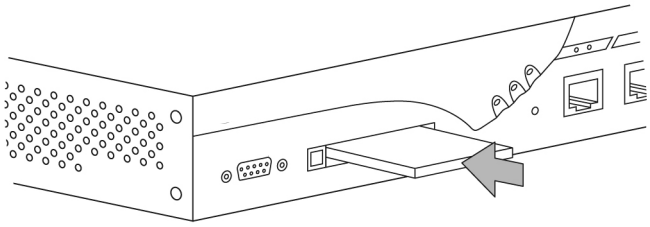


Figure 15. Inserting Compact Flash

Powering Up

The i series 400i contains two removable auto-switch 100V/240V AC redundant power supplies located on the back panel.

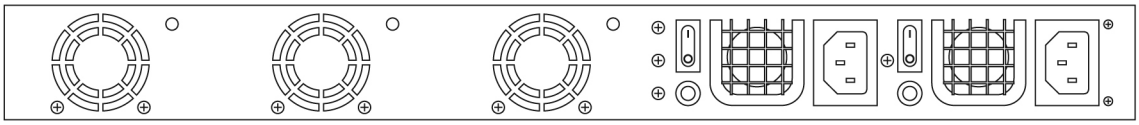


Figure 16. i series 400i Power Supplies

1. Plug the power cables into the i series 400i power supplies and then into the power source.
2. Push the power switch to the ON position. The i series 400i powers up.
3. Make sure that:
   - The Power indicator LED turns green.
   - The network port LED turns green/orange (color indicates a network connection and operating speed).
   - Each storage port indicator LED turns green/orange if connected to storage.
   - The fans start operating.

Replacing a Power Supply

To replace a power supply:

1. Remove the power cord from the faulty power supply.

2. Remove the screw located on the left of the on/off switch (Figure 17).
3. Raise the handle and pull the power supply out. It is safe to do this when the i series 400i is powered up.
4. Insert the new power supply and screw in place.
5. Plug the power cable into the power supply.
6. Push the power switch to the ON position.

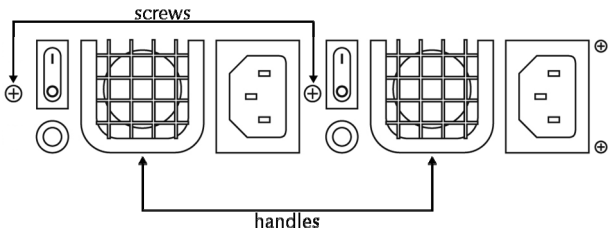


Figure 17. Replacing Power Supply

5 Getting Started

This section describes the basic installation and configuration procedures, including checklists and troubleshooting tips, for operating the i series 400i together with the i series manager Management System in a SAN environment.

Configuration of Storage Devices

Complete this pre-installation checklist of your storage devices before proceeding with the i series 400i Initial Configuration.

Table 4. Pre-installation Checklist

FC terminator	❑	A terminator is present to terminate the arbitrated loop.
RAID	❑	The storage systems controller is enabled and there are active RAID sets configured and initialized.
RAID – multiple RAIDSETs	❑	Each RAIDSET (SLICE) is assigned a unique LUN or target.
RAID – multiple channel	❑	All storage targets (LUN or devices) that should be visible to the i series 400i are exposed to the controller channel that is connected to the i series 400i.
Active/Passive failover	❑	All LUNs are exposed on the active controller, and the i series 400i is connected to an interface belonging to it.
Active/Active failover	❑	All controllers' interfaces expose the same storage targets.
FC zoning	❑	The correct WWN of the i series 400i interface is zoned with the storage that is designated to be used through the i series 400i.
Controller ACL	❑	Controllers are configured to allow NEXSAN i series 400i FC WWPN in the list of hosts that can access the presented LUNs. For test purposes ACL should be disabled. Use the CLI command `fc interface show` to list the i series 400i WWPN.

i series 400i Initial Configuration

Complete the following steps to complete initial i series 400i configuration.

STEP 1. Connect the storage devices

a) Connect the storage devices to the i series 400i storage ports (refer to Storage Port Connection, page 11).

STEP 2. Connect the network ports

a) Connect the GbE ports to your network or IP-SAN (refer to Network Port Connection, page 12).

b) ***Note:***
The i series 400i out-of-band Mgnt port cannot be used for iSCSI data.

STEP 3. Power up the i series 400i

a) Follow the power up procedure described in Powering Up, page 14.

b) At power-up the i series 400i performs an auto-discovery and registers all attached and powered-up storage devices.

STEP 4. Connect and configure the management console

The default management port for the i series 400i is MGNT. Do one of the following:

a) Telnet/SSH to the default IP (10.11.12.123) of the i series 400i.
or

b) Use the RS232 port to connect a console or dumb terminal (refer to

c) Console Port Connection, page 12) for initial system configuration. Use parameters **115200-8-N-1-N** and **Auto-Detect** as emulation.

STEP 5. Login to the i series 400i

a) Press **Enter** on your keyboard to open the i series 400i Login window.

b) Enter the default user name and password: **admin**.

c) Press **Enter** on your keyboard.

d) The **CLI** prompt > appears.

STEP 6. Configure initial i series 400i parameters

Accept or change the default values for:

a) IP Address.

b) IP Mask.

c) i series 400i name.
Note: Unless you change the default name, i series manager uses the IP address.

d) Management port (mgnt or eth1).
Note: You must enter the value in lowercase only.

Working with i series manager

STEP 1. Install i series manager

a) You must have the supported JAVA Runtime Environment (JRE) installed on the management station in order to install and run i series manager. The appropriate JRE version is supplied on the CDROM supplied with the i series 400i.

b) It is recommended to have IIS installed.

c) Install the i series manager software, by running the **i series manager_*x_x_x_x_Setup.exe*** file, located on your CD under the i series manager folder.

STEP 2. Open i series manager client

Do one of the following:

a) Run i series manager Client on the local machine from **Start→ Programs→ NEXSAN→ i series manager→ Server → Local Client**
or

b) Run through a Web browser connection to the i series manager URL: **http://<server IP or name>/i series manager/index.html**.

STEP 3. Login to i series manager

a) Enter the default user name: **admin**.

b) Enter the default password: **admin**.

STEP 4. Add the i series 400i i series manager

From the *Quick Launch* select either:

a) For a single i series 400i:
Configure > Create System Entity > Storage Resource Group [Single Switch]

b) For a Cluster:
Configure > Create System Entity > Storage Resource Group [Cluster]...

c) Enter the i series 400i configuration parameters in the dialog box.

STEP 5. Configure i series 400i Properties

a) From the *Quick Launch* select
Configure > Configure Network.
The i series 400i properties dialog box opens.

b) Select the i series 400i from the drop down list box at the top.
The i series 400i Properties dialog box opens displaying different tabs.

c) Toggle between these tabs to configure the different i series 400i properties.

Configure IPs for iSCSI Traffic

1) Toggle to the **IP** tab.
2) Click **Add...** and enter the Network Port IP address parameters.
3) Click OK.

Configure iSCSI Portals

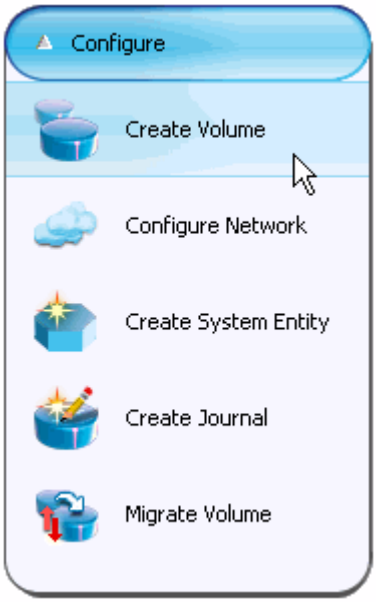
1) Toggle to the Portals tab.
2) Click **Add**... and enter the TCP port for each network IP address selected from the list. The default port number is 3260.

Configure IP Routing

1) If routing is needed, toggle to the **IP Route** tab.
2) Click **Add...** and enter the routing values.
3) A default gateway can be assigned by adding a route with the destination IP address of 0.0.0.0 and IP Mask of 0.0.0.0.

STEP 6. Create and Expose Volumes

a) From the *Quick* Launch select **Configure > Create Volume.**
b) Select a storage resource group from the list.
c) Assign an alias for the volume.
d) Check the Mirror checkbox if you want to create a mirror.
e) Select a storage from which to create this volume from the list of available storage.
f) Specify the size of the volume to create.
g) Select a target to expose the volume on or click **New Target...** to create a new target.



Note:
Target names must be lower-case and contain no special characters. The default for ***Default Access*** *is Read-Write (**RW**). If you plan on using ACL, change the Default Access to Not Available (**NA**).*

h) Assign a LUN for the target. Additional LUNs can be added to the targets as needed.
i) Click **OK** to expose the volume.

STEP 7. Volume Security (optional)

a) The Access Control List (ACL) for all targets can be set using **Identities**. See the i series manager GUI User Manual for details on how control and manage the access to your iSCSI volumes.

STEP 8. Host Operations (Microsoft Initiator 2.0 Example)

a) Open the Microsoft iSCSI initiator GUI on the host.

b) Toggle to **Discovery** tab.

c) Click Add (Target Portals). The Add Target Portal dialog box opens.

d) Enter the IP address of the target portal and the socket (the TCP port). Click **OK**.

e) Toggle to the **Targets** tab to view all available targets. Select a target and click **Log On...** and click **OK**. After Log On, the target's status is **Connected.**

f) The volumes are now available to the OS, and can be accessed and controlled through Computer Management.

STEP 9. Backup the Database

Note:

Once you have configured the i series 400i, it is recommended that you make a backup copy of the database after making significant configuration changes.

a) A TFTP server accessible to the i series 400i is required.

b) Log into the i series 400i and issue the CLI command:

```
ft upload db –fn <filename for database backup>
-ip <TFTP server IP address>
```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