



AI196

Intelligent Video Analytics Server

User Manual



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About This Manual

Conventions

Safety Symbols

Safety Precautions

Regulatory and Integration Information

About This Manual

Conventions

To make sure that you perform certain tasks properly, take note of the following symbols used throughout this manual.



Warning: Provides Information to prevent injury in the process of completing a task.



Caution: Provides Information to prevent damage to the components in the process of completing a task.



Important: Provides Information required for completing a task.



Note: Provides Tips to aid in completing a task.

Safety Symbols

The following symbols are placed on some components of the system to alert the user to potential hazards,



WARNING: Electric Shock Hazard – To reduce risk of injury from electric shock hazards, do not open this component.



WARNING: **Contains No User or Field Serviceable Parts – To reduce the risk of injury from electric shock hazards, do not open this component.**



WARNING: Hot Surface or Component - To reduce risk of injury from a hot component; allow the surface to cool before touching.



WARNING: Insert Network Interface Only - Any receptacle (e.g. RJ45) marked with this symbol indicates a network interface connection. To reduce the risk of electric shock, fire or damage to equipment, do not plug telephone or telecommunications connectors into this receptacle



WARNING: This symbol, on power supplies or systems, indicates that the equipment is supplied by multiple sources of power. To reduce the risk of injury from electric shock, remove all power cords to completely power down the system.



Weight in kg
Weight in lb

WARNING: This symbol indicates that the component exceeds the recommended weight for one individual to handle safely. To reduce the risk of personal injury or damage to the equipment, observe local occupational health and safety requirements and guidelines for manual material handling.

Safety Precautions



Technician Notes

- Only authorized technicians should attempt to repair this equipment.
- Before installing this system, carefully read all the manuals included with the system.
- All repair procedures allow only module replacement. Because of the complexity of the individual boards and sub-assemblies, no one should attempt to make repairs at the component level or make modifications to any printed wiring board. Improper repairs can create a safety hazard.
- To reduce the risk of personal injury from electric shock and hazardous energy levels, do not exceed the level of repairs specified in these procedures.
- The system is designed to be electrically grounded. To ensure proper operation, plug the AC power cord into a properly grounded AC outlet only.



Electrostatic Discharge Precautions

- Electrostatic discharge (ESD) can damage static sensitive devices or micro circuitry. Proper packaging and grounding techniques are required to prevent damage.
- Keep electrostatic-sensitive parts in their containers until they arrive at a static free work area.
- Use a wrist strap connected to the work surface as well as properly grounded tools and equipment
- Keep the area free of nonconductive materials such as ordinary plastic tools and foam packing.
- Avoid touching pins, leads, or circuitry.
- Always place drives with printed circuit board (PCB) assembly-side down.
- Grasp cards and boards by the edges. Hold drives by the frame. Avoid touching the solder joints or pins.
- If you need to lay the device down while it is out of the antistatic bag, lay it on the antistatic bag. Before picking it up again, touch the antistatic bag and the metal frame of the system unit at the same time.



System Warnings

- Avoid dust, humidity, and extreme temperatures; place the system on a stable surface.
- To reduce the risk of personal injury from hot surfaces, allow the hot-plug disk modules and other system modules to cool before touching them.
- To reduce the risk of electric shock or damage to the equipment, do not disable the power cord grounding plug. The grounding plug is an important safety feature.

- Ensure the power cord is inserted into a grounded electrical outlet that is easily accessible at all times. Unplug the power cord from the power supply module to shut off power to the equipment
- Protect the storage system from power fluctuations and temporary power interruptions with a regulating uninterruptible power supply (UPS). This device protects the hardware from damage caused by power surges and voltage spikes and keeps the system operational during a power failure.
- The storage system must always be operated with all hot plug modules installed or slot covers in place to ensure proper cooling.
- Route power cords so that they will not be walked on or pinched by items placed upon or against them. Pay particular attention to the plug, electrical outlet, and the point where the cords exit from the product.

Regulatory and Integration Information

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this system is assigned a serial number. This system serial number can be found on the product label, along with the required approval markings and information. When requesting certification information for this product, always refer to this serial number. This serial number should not be confused with the marketing name or model number.

Product Regulatory Compliance

Product Safety Compliance

Worldwide Safety approvals can be supplied upon request. Please contact your sales representative for approvals.

Product EMC Compliance

This product has been assembled from components that comply with the following electromagnetic compatibility (EMC) regulations.

Communications Commission Notice

Part 15 of the Federal Communications Commission (FCC) Rules and Regulations has established Radio Frequency (RF) emission limits to provide an interference-free radio frequency spectrum. Many electronic devices, including computers, generate RF energy incidental to their intended function and are, therefore, covered by these rules. These rules place computers and related peripheral devices into two classes, A and B, depending upon their intended installation. Class A devices are those that may reasonably be expected to be installed in a business or commercial environment. Class B devices are those that may reasonably be expected to be installed in a residential environment (for example, personal computers). The FCC requires devices in both classes to bear a label indicating the interference potential of the device, as well as additional operating instructions for the user.

The rating label on the device shows which class (A or B) the equipment falls into. Class A devices do not have an FCC logo or FCC ID on the label. Class B devices have an FCC logo or FCC ID on the label. Once the class of the device is determined, refer to the following corresponding statement.

Class A Equipment

This equipment has been assembled with components that 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 instructions, 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 personal expense.

Declaration of Conformity for Products Marked with the FCC Logo—United States Only

This device complies with Part 15 of the FCC Rules Operation and is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. For questions regarding your product, please contact your sales representative.

To identify this product, refer to the Part, Series, or Model number found on the product.

European Union Notice

Products with the CE Marking comply with both the EMC Directive (89/336/EEC) and the Low-Voltage Directive (73/23/EEC) issued by the Commission of the European Community. Compliance with these directives implies conformity to the following European Norms (items in brackets are the equivalent international standards):

Table 1: European Union Safety Requirements

EN55022 (CISPR 22)	Electromagnetic Interference
EN55024 (IEC61000-4-2,3,4,5,6,8,11)	Electromagnetic Immunity
EN61000-3-2 (IEC61000-3-2)	Power Line Harmonics
EN61000-3-3 (IEC61000-3-3)	Power Line Flicker
EN60950 (IEC950)	Product Safety

Power Cords

The power cord set included in the system meets the requirements for use in the country where the system was purchased. If this system is to be used in another country, contact your sales representative to purchase a power cord that is approved for use in that country.

The power cord must be rated for the product and for the voltage and current marked on the product's electrical ratings label. The voltage and current rating of the cord should be greater

than the voltage and current rating marked on the product. In addition, the cross-sectional area of the wires must be a minimum of 1.00mm² or 18AWG, and the length of the cords must be between 1.8m (6 feet) and 3.6m (12 feet). If you have questions about the type of power cord to use, contact your sales representative.

Introduction

Audience Assumptions
About This Guide
Packing Checklist
Specifications
System Overview

Introduction

Audience Assumptions

This manual assumes that you are a service technician or network administrator familiar with computer hardware, data storage and network administration terminology and tasks.

About this Guide

AI196/AS196 comes with appropriate hardware installed. User only needs to configure IP addresses, install appropriate VMS software to administer and view the cameras. This manual is generally organized as follows:

Packing Checklist

Make sure you have all the components shipped with your system. If any item is damaged or missing, please contact your sales representative for replacement. The AI196/AS196 is shipped with the following:

Table 2: Packing Checklist

Chassis	3U Enclosure
Solid State Disk Drives	Two 240/480/960GB SSD for OS
HDD	16 3.5" Hard Drives depending upon GPU configuration. 6, 8, 10, 12, 14 and 16TB SATA III Video Class
Power Cords	Two Power Cords

Specifications

The table below is the technical specification for the AI196/AS196.

Table 3: Specifications

Dimensions	Height: 5.2" / 133 mm Width: 17" / 430 mm Depth: 26.8" / 680 mm
Weight	Max-weight: 74 lbs / 34 kg \pm 5%
Temperature	Operating System: +10°C~+35°C Non-operating System: -40°C~+70°C
Humidity	Operating System: 20%~80% Non-operating System: 10%~95%
Power	➤ 100-127Vac, 50-60Hz, 800 Watts Max ➤ 200-240Vac, 43-63Hz, 1200 Watts Max

System Overview

The AI196 is optimized for Analytic/Machine Learning Video Surveillance applications. The AI196 comes fully integrated and tested with industry leading video analytic software, offering a turnkey platform for Artificial Intelligence, Machine learning and Heuristic Analytic applications.



Figure 1: AI196

Powerful

AI196 is built around two high performance Intel® Xeon Scalable CPUs and DDR4 2666 MHz ECC memory. AI196 offers high performance and bandwidth connectivity to meet the requirements of the most demanding analytics requirement. AI196/AS196 can be configured with up to three Nvidia RTX2080, or four RTX 4000, or six P4000.

Reliable

The AI196 provides dual, redundant power supplies. It uses ECC RAM and it guarantees that video being stored, read, and transferred is always correct. It uses a parity bit to accomplish the data protection. Most NVRs and DVRs are not protected to this level and with these products, crucial video can be lost.

SSD Drives

SSD drives are designed to deliver reliable 24×7 operation and optimized for power consumption, quiet operation, and video. This ensures the highest video storage performance, with enterprise-class reliability and a significant system cost savings. AI196 uses two SSDs in RAID 1 configuration for Operating System.

Optimized

Designed and optimized for video analytics. It delivers the demanding performance for the most demanding installations.

High Capacity Storage

AI196 can provide 16 Hard drives each with capacity from 6TB to 16TB. It offers market leading density and performance to deliver a unique video analytics solution.

Upgradable

Additional RAM can be added, up to 768 GB of RAM.

Easy

The AI196 delivers effortless installation, management and administration. All administration functions assume technicians have basic to no storage knowledge. Once racked, setup time should be 15 minutes or less.

Hot-swappable

The AI196 features 16 3.5" hot-swappable HDD drives and power supplies for easy installation and maintenance.

Manageable

Very easy to manage with an optional web-based remote management, GUI-driven iKVM. The iKVM provides full control of server functions with dedicated hotkeys and remote server screen. Virtual media-over-LAN helps share local devices with target servers, enabling fast troubleshooting.

System Specification

Core Technology	
CPU Type	Dual Intel Xeon Scalable
Socket	2 x Socket LGA3647
Core Logic	Intel® C621 PCH Chipset
Memory size	Up to 768 GB per blade
Memory type	DDR4 2666 ECC RDIMM
Storage	
SSD	2 2.5" Hot Swappable
SSD Drive support	240, 480, 960 GB SSD
	SSD for OS
RAID	0,1,5,10
HDD	16 3.5" Hot Swappable.
Networking	
Data Ports	2 x GbE (1 shared with Management)
Management	1 x GbE (shared with Data)
Display Outputs	
Onboard Graphic	ASPEED AST2500 with 64MB VRAM
I/O Ports	
	4x USB 3.0 (rear), 2x USB 3.0 (front)
	1 x D-Sub (VGA) (Removed with 6 P4000 GPU cards)

Compliance	
Safety	US/Canada (UL1950-CSA950)
	Europe (CE, EN55022 compliance to EU Directive 89/366/EEC& TUV)
EMI	US (FCC , CFR47 Part 15, Class A)
	Europe (CE, EN55022 class A & EN55024)
	Australia (C-TICK), Taiwan (BSMI)
Physical Characteristics	
Dimensions (in./mm)	17" x 26.8" x 5.2" / 430 x 680 x 133 mm
Weight	75 lbs. /34 Kg (max) ±5%
Power	Dual redundant 1+1
Voltage	100 - 240 V _{AC} Dual redundant 1+1
Watts	100-127Vac, 50-60Hz, 800 Watts Max 200-240Vac, 43-63Hz, 1200 Watts Max
Operating Environment	Designed for 24x7x365
Operating temperature	10°C ~ 35°C
Non operating temperature	-40°C ~ 70°C
Humidity	20% ~ 90% (Non condensing)
Operating altitude	0 to 10,000' / 0 to 3000m 20% ~ 90%

Component Identification

Component Identification:

Front Panel

Following figure shows each front panel component:

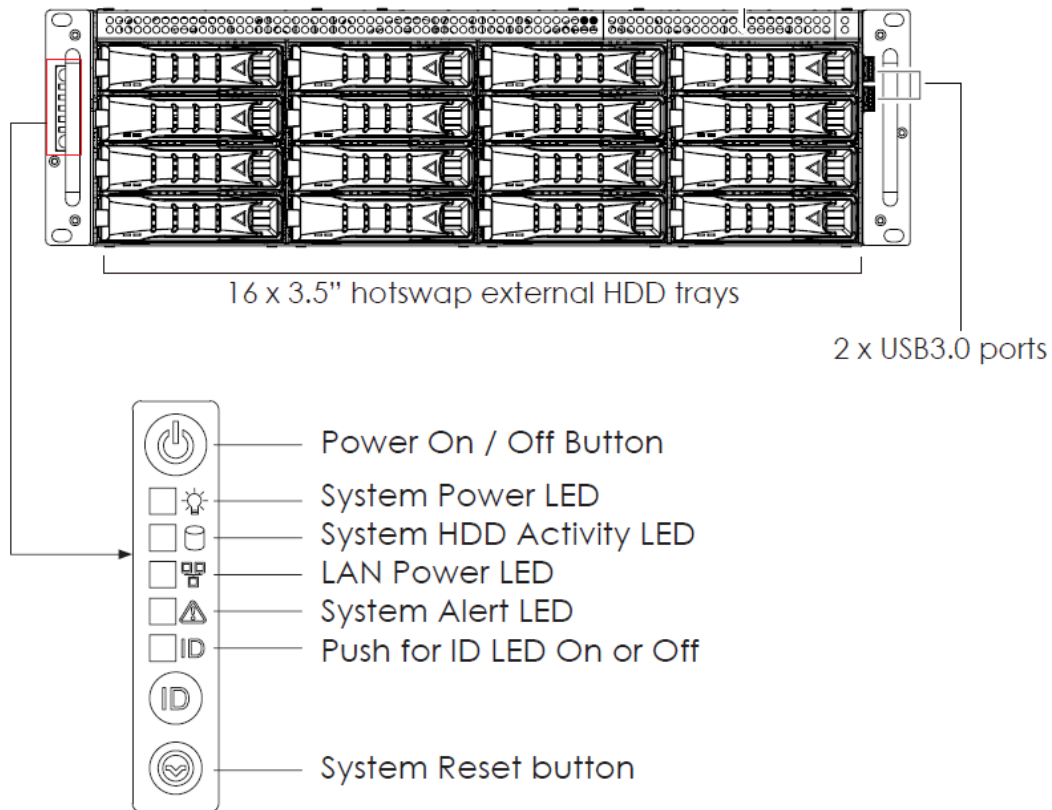


Figure 2: Front Panel

Rear View

Following diagram shows the location of all the rear I/O ports on AI196. Power Supplies are also shown.

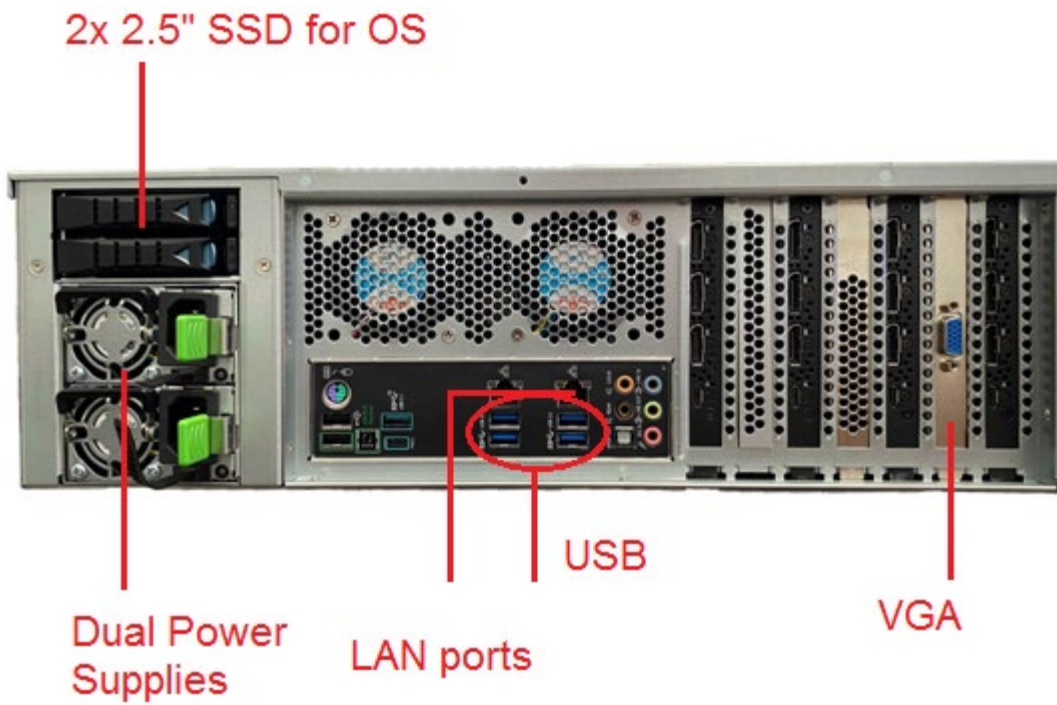


Figure 3: AI196 Rear View

Hardware Installation

Hardware Installation:

This chapter provides detailed instructions on hardware installation.

Removing/Installing a Drive Tray

Release a drive tray by pressing the unlock button.



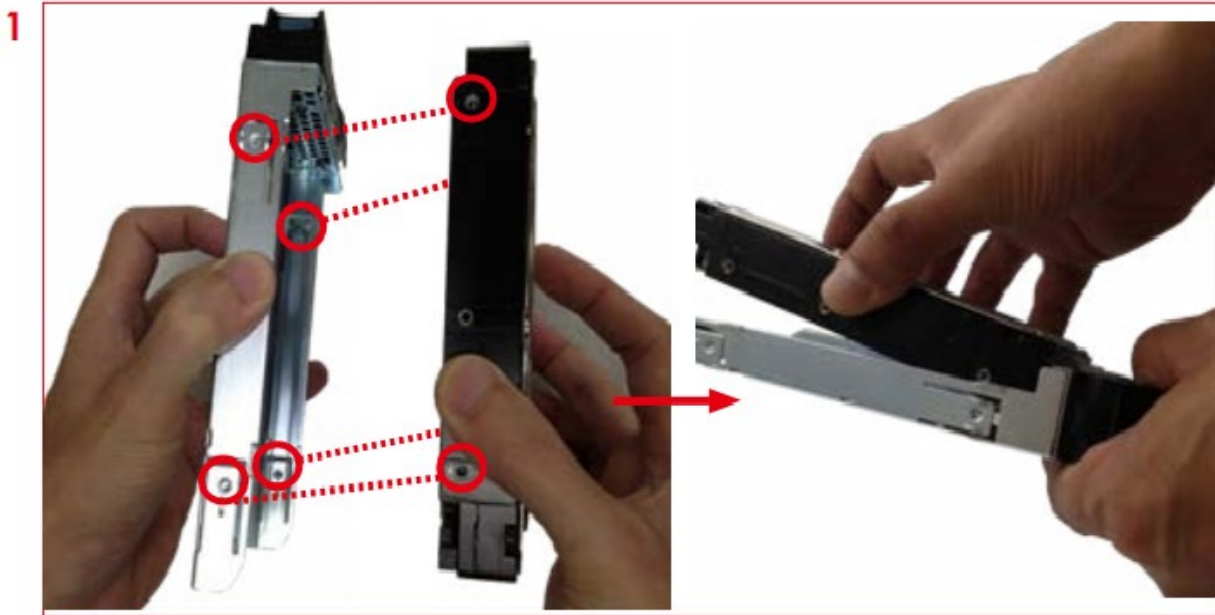
Pull out the HDD tray handle and slide out the HDD tray.

2

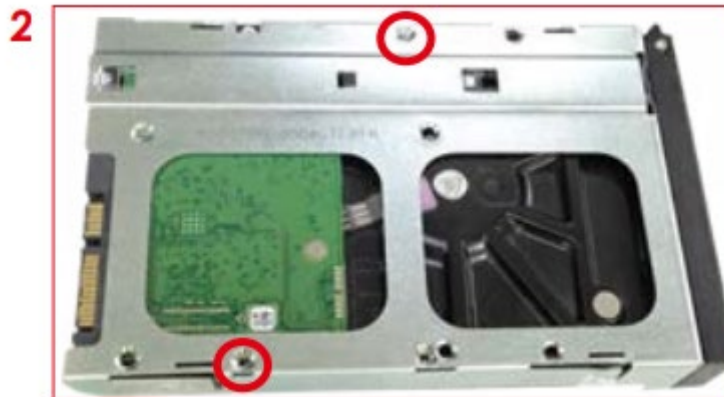


Installing a Hard Disk Drive

Directly place HDD into tool-less HDD tray until it snaps. Please check if the screw holes on HDD match the dimples on HDD tray.



HDD can also be screwed on HDD tray by reserve 2 screw holes at the bottom for optional screw mounting.



Insert the drive tray into chassis HDD cage. Make sure the drive tray is correctly secured in place when its front edge aligns with the bay edge. Push the tray lever until it reaches the end and clicks

3



Removing a Hard Disk Drive

Push up HDD from the bottom.

1



Remove HDD out from HDD tray

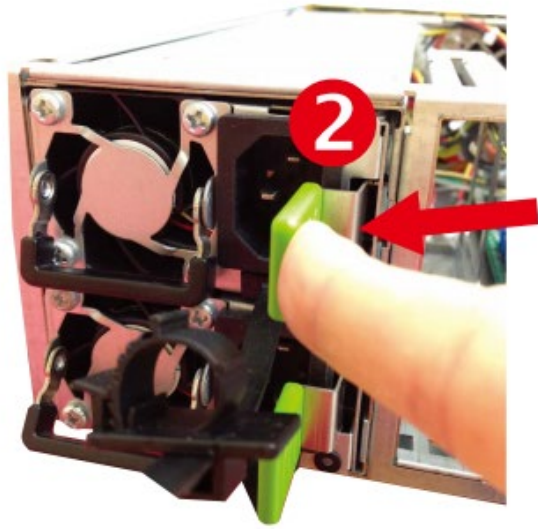
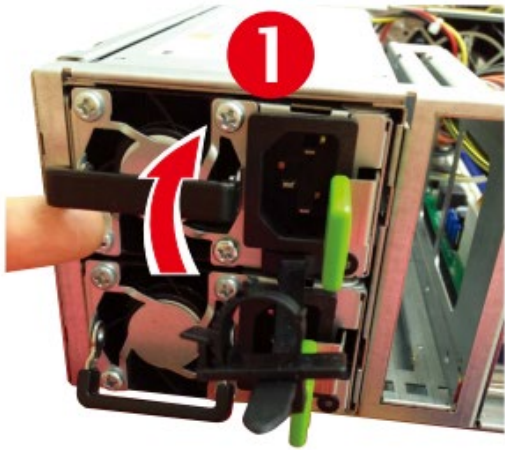


Removing a PSU module

- Remove power cables connected to the PSU module.
- Allow a minute for fan to spin down.
- Pushing the latch then hold the tray handle tab.
- Then pull the PSU module gently until it slides out of the enclosure.

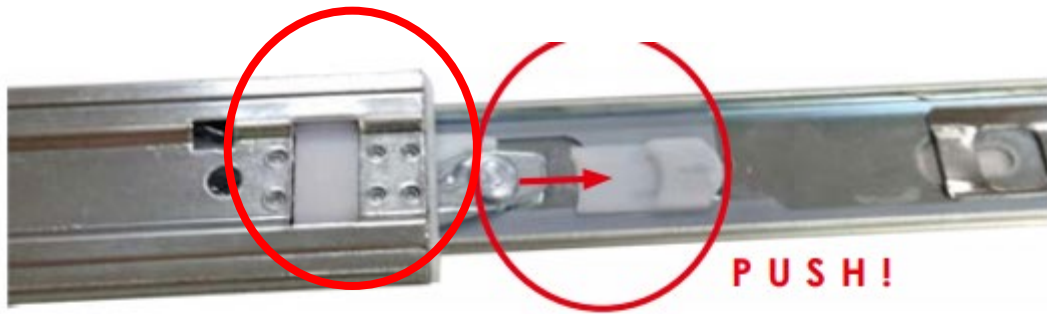
Installing a PSU Module

- Slide in PSU module.
- Make sure the latch on the module is fully hooked onto the PSU housing.

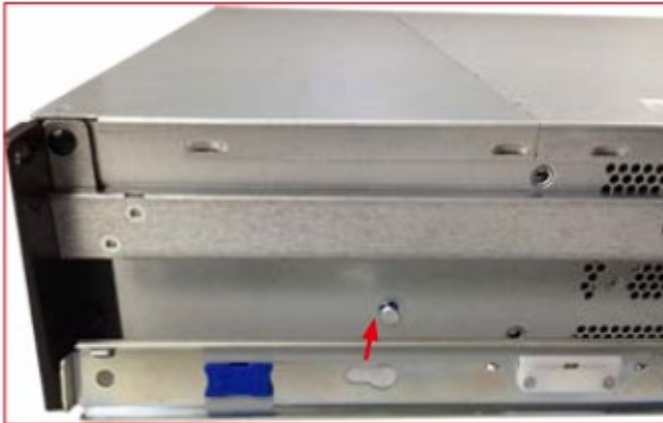


Tool-less Blade Slide Installation Instruction

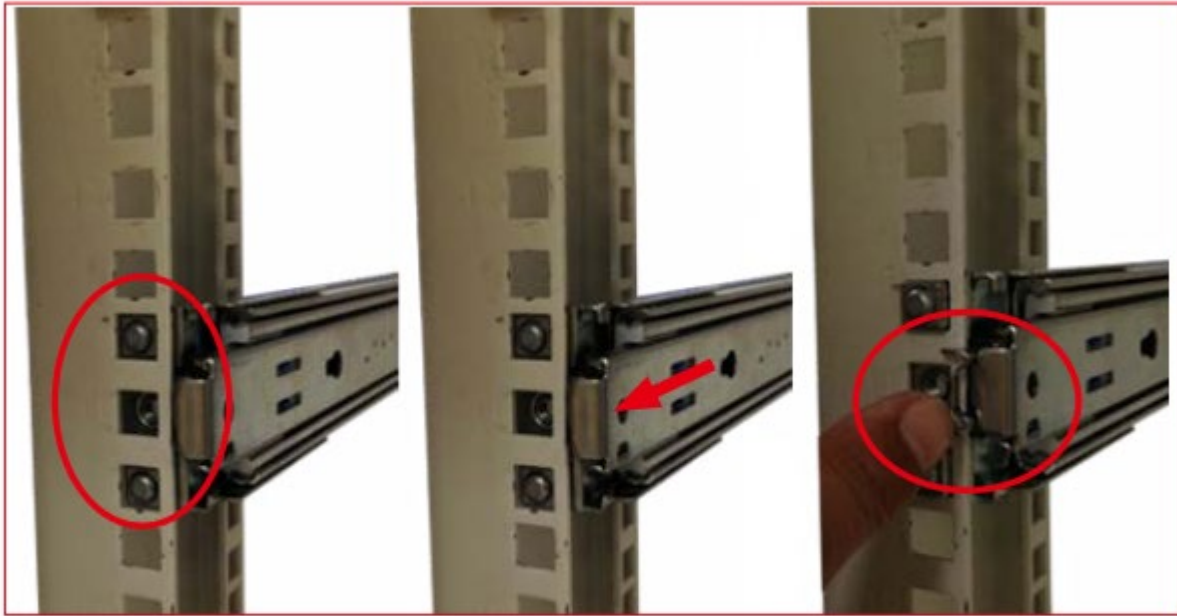
Release and detach the inner rail from the slide



Attach inner rail to the system.



Attach outer rail to the rack.



1 ALIGN

2 PUSH

3 LOCK



WARNING / CAUTION

- Verify ball bearing retainer is locked forward.
- Pull out the intermediate rail until locked out.
- Slide release tab and push system into rack.

