



SM VALUE ADD TECHNOLOGIES

Systems, Software, Fiber Optics and Data Center Connect Solutions

SM VADD TECHNOLOGIES

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## AI DATA Center Rack Up to 100 Tbps

### Product Overview

**Product Name:** Plug and Play AI Rack for High Data Rate and High Bandwidth Applications

**Capacity:** 96 Data Ports, Scalable up to 100 Tbps.

**Description:** A turnkey, high-density, structural infrastructure solution engineered for next-generation AI clusters, GPU farms, and low-latency storage fabrics. Pre-configured for immediate "plug-and-play" deployment, this 42U containment architecture eliminates complex multi-tier fiber splicing for instant plug and play connectivity to support massive data throughput with zero deployment lag.

### 1. High-Density Fiber LIU Architecture & Port Breakdown

The core patching infrastructure consists of a modular, pre-configured 96-Port Light Interface Unit (LIU) optimized for **OM4 Multimode Fiber** mediums. The system is divided into three distinct performance zones to handle mixed-generation hardware concurrently:

#### Data Port Tiers (96 Ports Total)

- **High-Tier Compute Fabric:** Natively accommodates ultra-dense **800G** (OSFP/QSFP-DD via MPO-16 or 2 X MPO12 ) and **400G** data lanes.
- **Mid-Tier Cluster & Core Sync:** Supports **200G** and **100G** parallel optics using high-performance Base-8 MTP-to-MTP/LC breakout modules.
- **Legacy & Storage Interconnect:** Provisions **40G**, **25G**, and **10G** channels through high-density plug-and-play fiber cassettes.
- **Fiber Medium Interoperability:** Engineered for ultra-low insertion loss **OM4 Multimode** parallel.

TOTAL CAPACITY: 96 MODULAR DATA PORTS (SCALES UP TO 100 Tbps)

ZONE 1 (AI & GPU Fabric) 24x Native 800G Ports - Dedicated MPO-16 Adapter Panels

ZONE 2 (Core & Compute Sync) 24x Native 40G / 100G Ports - Base-12 MPO/MTP Core Connectivity

ZONE 3 (Storage & Hypervisors) 48x Multi-Rate 10G/25G/32G/64G Ports - High-Density Duplex LC Connections

MANAGEMENT TIER 24x RJ45 10G Copper Ports

### Detailed Media Specifications

#### Zone 1: High-Tier Ultra-Bandwidth (24 Ports)

**Target Bandwidth:** Natively optimized for **800G/400G** data streams.

- **Interface Hardware:** 24x Native Pinned **MPO-16** Pass-Through Adapter Panels.
- **Application:** Ideal for connecting top-of-rack InfiniBand Quantum-X800 or Ultra-Ethernet switches directly to heavy-compute GPU nodes using standard 16-fiber parallel optics.

#### Zone 2: Mid-Tier Cluster & Backbone Fabric (24 Ports)

- **Target Bandwidth:** Natively optimized for **40G** and **100G** links.

- **Interface Hardware:** 24x Native **MPO-12** Core Panels (Base-12 configuration).

**Application:** Ideal for standard high-performance computing (HPC) nodes, core network uplinks, and inter-rack trunk links.

#### Zone 3: Storage & Virtualization Tier (48 Ports)

- **Target Bandwidth:** Multi-rate compatibility supporting **10G**, **25G**, **32G**, and **64G** transmission speeds.

- **Interface Hardware:** 48x High-Density **Duplex LC** Connections (fed by pre-terminated rear MTP-to-LC internal breakout cassettes).

- **Application:** Optimized for storage area networks (Fibre Channel 32G/64G), enterprise virtualization hypervisors, and legacy network peripherals.

### 2. Physical & Mechanical Specifications

Parameter	Specification
Enclosure Height	42U Standard Rack
Internal Mounting Width	19-inch Industry Standard (EIA-310E compliant)
Mounting Hardware	Adjustable Heavy-Duty Mounting Rails / Fixed L Angles
Exterior Width Options	600 mm (Standard) or 800 mm (High-Density Cable Management)
Depth Range Options	1000 mm to 1200 mm (Optimized for deep multi-GPU nodes)

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Static Weight Capacity Rated for 900 kg to 1400 kg load configurations Thermal & Security Perforated Front/Rear Doors, Solid Side Panels, Secure Locksets

### 3. Power & Airflow Management

- **Intelligent Power Distribution:** Dual (2) Vertical 24-Socket Power Distribution Units (PDUs).
  - **Space Efficiency:** PDUs operate in 0U Space, preserving all 42 rack units for revenue-generating active compute and network hardware.
  - **Airflow Mitigation:** Equipped with heavy-duty air dams, rubber-grommet cable pass-through, and tool less Blanking Panels to stop hot air recirculation and reinforce strict hot/cold aisle isolation.
  - **Cable Routing Architecture:** Integrated vertical and horizontal high-capacity cable managers, optimized for heavy-gauge 800G optical and copper DAC cables.
- High-Bandwidth Connectivity & Fiber LIU**

The rack features a unified, modular light interface unit (LIU) patch panel design that eliminates field splicing and supports hot-swappable, multi-rate fiber cassette tiers.

### 4. Management & Auxiliary Interface

- **Dedicated Copper Patch Panel:** 24-Port, 1U RJ45 High-Performance Patch Panel.
- **Speed Rating:** Certified for 10G Ethernet Applications (Category 6A / Category 7 baseline).
- **Application Scope:** Engineered explicitly for out-of-band IPMI device management, KVM-over-IP connectivity, serial console access, and environmental sensor monitoring strings.

### 5. Logistics & Deployment Velocity

- **Delivery Lead Time:** Guaranteed shipment within 10 working days from order validation.
- **Deployment Readiness:** Ships fully assembled, pre-wired for basic power, and fitted with empty patch chassis slots. Field technicians simply slide in hardware nodes, snap in required media cassettes, and route external trunk connections.

To finalize production of this data sheet for your team, let us discuss [Chandra@smvadd.com](mailto:Chandra@smvadd.com), [www.smvadd.com](http://www.smvadd.com)

Description	Option 1	Option 2
42 In ch Rack 800 X 1000	Included	Included
24 Port MPO 16 LIU 800G/400G	Included	Included
24 Port MPO 12 LIU 100G/40G	Included	Included
48 Port LC DX LIU 10G/25G/64G	Included	Included
24 Port Rj45 Copper Patch Panel CAT6A	Included	Included
24 Socket ,5A ,Vertical PDU Qty 2	Included	Optional
MPO16 Patch Cords Qty 24	Included	Optional
MPO12Patch Cords Qty 24	Included	Optional
MPO16 to 8 X LC Fanout Qty 12	Included	Optional
MPO12 to 8 X LC Fanout Qty 12	Included	Optional
LC ,DX OM4 Patch Cords Qty 50	Included	Optional
CAT6A Patch cords Qty 24	Included	Optional

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