AI Reference Design

1 SU NVIDIA DGX H100 SuperPOD

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Legrand, a global specialist in electrical and digital building infrastructures, has been a leading innovator in the data center industry for over three decades. With the rise of artificial intelligence (AI), Legrand created a comprehensive AI Reference Design aimed at supporting the generative AI systems going into modern data centers. This design utilizes technologies that improve the functionality, efficiency, and user experience of today's data center infrastructure by leveraging our experience and expertise in the areas of power, thermal management, and connectivity for the data center. It enables sophisticated machine learning algorithms and data analytics to take place on data gathered from our sensors and power products. By continuously monitoring and analyzing temperature, humidity, and power data, the data center operator can make real-time adjustments to cooling and server workloads that optimize performance and energy consumption. This leads to significant cost savings opportunities and supports sustainability efforts.

The Legrand AI Reference Design supports the implementation of NVIDIA DGX H100 SuperPODs.

ABOUT THE NVIDIA DGX SUPERPOD

- A DGX SuperPOD is built up from smaller modules referred to as Scalable Units (SU).
- A full SuperPOD is comprised of four Scalable Units (4 SU).
- Each SU contains 31 or 32 DGX nodes, with 4 DGX H100 systems per rack across 8 racks, 1 node generally removed for placing Unified Fabric Management (UFM) connectivity.
- 1 SU may be in a single row, or it may be built across the aisle of the data center.
- Layout impacts cable lengths and part numbers.

NVIDIA enables third parties such as Legrand to build racks, containment and other equipment necessary to house, cool, power, connect and monitor clusters of NVIDIA systems. Legrand offers a broad range of products and solutions supporting the ecosystem of integrators and end users implementing NVIDIA-based AI.

ABOUT THE REFERENCE DESIGN: DISCLAIMERS

- In this document, we detail the Legrand offering that supports 1 SU of a SuperPOD.
- All quantities, rack sizes, busway lengths, cable lengths, cable colors and so forth must be adjusted to the scale and layout of your specific installation.
- Please consult with your Legrand team and our authorized resellers and representatives today to get solutions tailored to your specific application.

NVIDIA REFERENCE GUIDE REQUIREMENTS & MATCHING LEGRAND SOLUTIONS

DGX H100 SuperPOD Implementation

Legrand provides a line-by-line matchup of NVIDIA SuperPOD data center design requirements and Legrand solutions to assist you with deployment of your SuperPOD.

Section	NVIDIA DGX SuperPOD Data Center Design Reference Guide Requirement	Legrand offering
1.3	10.2 kW per DGX H100 (total 6 PSUs)	Raritan PX3-5008I2R-Q1
	Operating temp 5-30°C	All Server Technology and Raritan PDUs support 0-60C operating temperature, suited for hot aisle
1.6	Minimum airflow of 157 ft³/min per kilowatt	Requires airflow of 6,437 ft³ total for 4xDGX H100 OR use RDHX such as USystems ColdLogic CL20
3.1	Minimum of 3 power sources per DGX rack, each energized to carry 50% of peak total load.	Use 3x Raritan PX3-500812R-Q1 per rack, fed by Starline T5 track busway and Remote Plug-In Actuators that are connected upstream to separate UPS and utility power sources
	Minimum of 2 power sources for management racks.	Use 2x Raritan PX3-500812R-Q1 per rack, fed by Starline T5 track busway and Remote Plug-In Actuators that are connected upstream to separate UPS and utility power sources
3.2.n	Can be used for 2N, N+1, and Enhanced N+1	The PX3-500812R-Q1 can be deployed in all configurations outlined by Nvidia. Call your Legrand representative if you need assistance.
3.3	Earth/bond the data center racks to the telecommunications ground that is in turn connected to facilities ground.	All Legrand T-Series cabinets support grounding and bonding solutions. Check our catalog here for your application.
3.4	Raritan, ServerTech PDUs recommended	Raritan and Server Technology PDUs are brands of Legrand and are available globally. The Raritan PX3-500812R-Q1 form factor is suited to the Nvidia reference design.
	Phase load balancing support	Nvidia recommends 415V / 3Ph / 30A for N America. Server Technology and Raritan offer numerous 415V / 3Ph/ 30A and 415V / 3Ph/ 60A intelligent PDUs to support your load balancing efforts.
4.2	Racks EIA-310, 19" mounting	The Legrand T-Series is available in standard and custom configurations that meet or exceed all Nvidia SuperPOD DGX H100 deployments.
	At least 24" x 48" (600mm x 1200mm), 32" x 48" (800mm x 1200mm) recommended	
	At least 48U tall	
	No chimneys	
	Sidewalls mandatory	
	Two temp sensors connected to PDU mounted at 4U and 42U positions, mounted on the right side when facing the front of the rack	DX2-T2H2 is a two sensor kit offering Temperature + Humidity Sensors that plug into the PX3-500812R-Q1 via standard Cat5/6 cables.
	Cable management devices mandatory	A broad array of Legrand cable management solutions are available to work with Legrand cabinets.
	Air intake ducts optional	All T-Series cabinets offer support for a variety of switches requiring air intake ducts. Check our cabinet accessories catalog here.

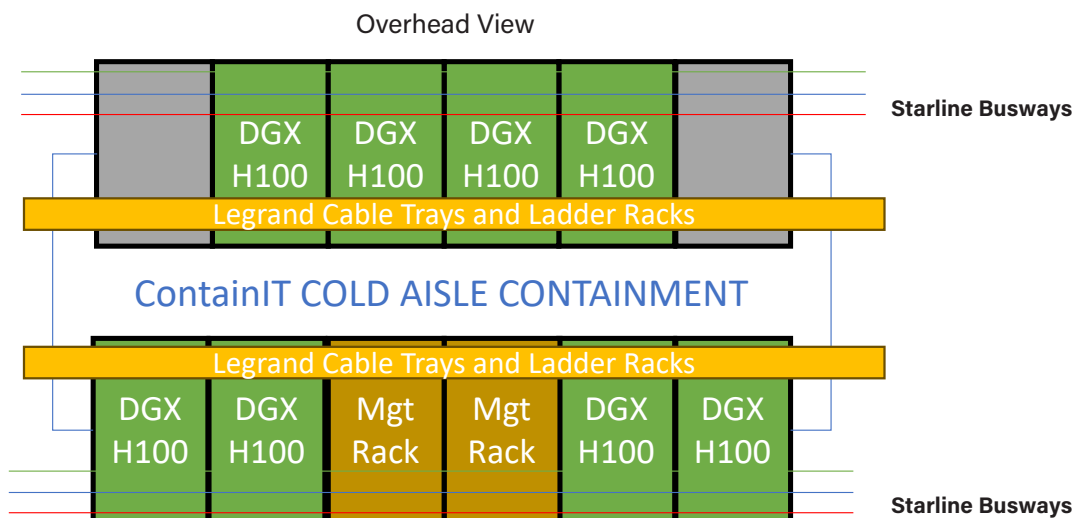| Section	NVIDIA DGX SuperPOD Data Center Design Reference Guide Requirement	Legrand offering
4.3	Cabinet front and rear doors not recommended unless mandated by facility operations or security policy	Operating in this fashion is only recommended in conjunction with either hot-aisle or cold-aisle containment. The Legrand Contain-IT Flex system lets the data center choose which style for convenience and efficiency.
	Grounding and bonding	All Legrand T-Series cabinets support grounding and bonding solutions. Check our catalog here for your application.
	Blanking panels for unused locations	Blanking panels for unused RU in the rack are highly recommended and readily available from Legrand. Use BFPT blanking panels, available in 1RU and 2 RU.
	Cabling grommets	Cabling grommets and seals for the rack are highly recommended and readily available from Legrand. See the Cabinet Accessories Catalog.
4.4	Cabinets shall be fastened to the floor surface	Seismic bracing is available for all T-Series cabinets. Please ask your Legrand representative for TF-SBK.
4.5	Seismic bracing in accordance with AHJ.	Seismic bracing is available for all T-Series cabinets. Please ask your Legrand representative for TF-SBK.
4.6	Cable runs < 50m (165ft)	These lengths are a function of the layout implemented at the data center and vary according to rack height, over or under floor cable runs, and whether or not the SuperPOD is linear in one aisle or split across opposing aisles. Legrand offers a variety of fiber solutions suited to your application.
4.7	1RU (1.75") spacing	The internal holes and rails of the T-Series support EIA standard 1.75" RU spacing.
	Rack opening minimum 450mm (17.72")	T-Series supports 450mm (17.72") opening
	Front panel width supported 482.6mm (19")	T-Series supports front panel width of 482.6mm (19")
4.8	Servers mounted starting at bottom of the rack	This is recommended for all T-Series racks to establish the lowest center of gravity possible and minimize server lift heights.
	3RU reserved towards middle of rack for airflow	Final rack elevation / plan is up to the end user. T-Series racks support this configuration.
	Horizontal rPDUs placed at top of rack	This allows for DGX H100s to reside in the lower RU spaces of the rack. Raritan, Server Technolgy both offer horizontal PDUs.
4.9	DGX H100 airflow is front to back of unit	Final rack elevation / plan is up to the end user. T-Series racks support this configuration.
	Orient network hardware to support targeted hot aisle temperatures, airflow direction, and cable temp ratings.	Final rack elevation / plan is up to the end user. T-Series racks support this configuration.
4.13	Fire detection and prevention systems compliant with AHJ rules and regulations	Legrand SmartSensors work with Legrand PDUs to supplement the dedicated fire detection and prevention systems of your data center. Temperature thresholds can be configured in our PDUs to detect thermal runaway and shut off power to the connected systems.
5.10	Cable weights compatible with cable trays that are mounted in a structurally sound way	Compatible tubular runways, wire mesh cable trays, fiber raceways and other cable management solutions are available from Legrand.
6	Cooling capacity commensurate with N (two circuits)	Legrand recommends the use of our ColdLogik RDHx by USystems. We also support other air and liquid-based cooling solutions as needed.
6.1.1	Aisles need to be at least 36" wide	ContainIT aisle containment systems
	Cold aisles are recommended to be at least 48" wide	ContainIT aisle containment systems
6.1.2	Prevent air recirculation from hot aisle to cold aisle	ContainIT aisle containment systems

LEGRAND BILL OF MATERIAL (BOM)

DGX H100 SuperPOD Implementation

Category	Brand	Model	Qty	Legrand P/N	Description
Cabinet / Rack	Legrand	T-Series	10	NVIDPD13	EIA standard cabinets, tubular steel, up to 52U height
Containment	Legrand Contain-IT Flex			Custom. Please contact your Legrand representative	Configured / Engineered to order
		End Row Doors		Custom. Please contact your Legrand representative	Sliding doors for containment aisles with cabinets up to 52U high
Cooling	USystems	ColdLogik		CL20	Rear door heat exchanger
Busway	Starline	T5	12	US800T5H4S-10000C-STD0	800A Straight Busway
	Starline	T5	6	UF800T5H4S-BRFN-0102C-STD0-M73009	800A End feed
	Starline	T5/M70	28	UCT5C53x-25-1CBBxxxN-xxx	415V/60A/3-Ph M70 with breakers; 3 per DGX rack, 2 per Mgt Rack
	Starline	T5	6	SJK800T5-2	Joint kits
	Starline	T5	6	SEC800T5	End caps
PDU	Raritan	PX3	24	PX3-500812R-Q1	3 per DGX rack
	Raritan	PX3 or PX4	4	PX3-5747V-V2 PX3-5747I2U-O1V2 PX4-56A912U-C8E7V2	Use 1 of the 3 models shown, 2 per Management rack
Sensors	Raritan		20	DX2-T1H1	Temperature and humidity sensor
Networking / In-band Ethernet	Approved Networks		64	MFS1S00-H001E-A	200 Gbps QSFP56 AOC; DGX H100 system
	Approved Networks		2	QSFP100G-AOC	100 Gbps QSFP to QSFP AOC; Management nodes
	Approved Networks		1	QSFP28-CWDM4	100 Gbps QSFP CWDM4; Uplink to core DC
	Approved Networks		2	QSFP100G-AOC	100 Gbps QSFP to QSFP AOC; NFS Storage
	Approved Networks		6	QSFP100G-AOC	100 Gbps QSFP to QSFP AOC; Leaf – Core cables
Networking / Compute Infiniband	Ortronics		510	Q1E1EB1007EMM0030M	NDR Cables1 , 400 Gbps; DGX H100 systems to leaf, leaf to spine
	Ortronics		1	U1E1ED2010607M030M	NDR Cables, 200 Gbps; UFM to leaf ports

| Category	Brand	Model	Qty	Legrand P/N	Description
Networking / Compute Infiniband	Approved Networks		384	OSFP-FIN-800G-SR8-5	Switch OSFP Transceivers; Leaf and spine transceivers
	Approved Networks		127	OSFP-CLT-800G-VR8-5	System OSFP Transceivers; Transceivers in the DGX H100 systems
	Approved Networks		1	MMA4Z00-NS400-A	UFM System Transceivers; UFM to leaf connections
Networking / Infiniband Storage	Ortronics		124	Q1E1EB1007EMM0030M	NDR Cables, 400 Gbps; DGX H100 systems to leaf, leaf to spine
	Approved Networks		12	MFA7U10-H030-A	NDR Cables, 2x 200 Gbps; Storage
	Approved Networks		1	MMA4Z00-NS400-A	UFM System Transceivers; UFM to leaf connections
	Approved Networks		93	OSFP-FIN-800G-SR8-5	Switch Transceivers; Leaf and spine transceivers
	Approved Networks		64	Q112-FLT-400G-SR4-5	DGX System Transceivers; QSFP112 transceivers
			1	U1E1ED2010607M030M	NDR Cables, 200 Gbps; UFM to leaf ports
	Approved Networks		1	MFA7U10-H030-A	HDR 400 Gbps to 2x200 Gbps; Slurm management
	Approved Networks			MFA7U10-H030-A	Storage Cables, NDR200; Varies
Networking / Out of Band Mgt	ZPE Systems	Nodegrid Net SR	1	ZPE-NSR-816-DDC	Nodegrid Hive SR, 8 Core, 16GB, DDC
	ZPE Systems		1	ZPE-NSR-16ETH-EXP	16x Ethernet Expansion Card
	ZPE Systems		2	ZPE-NSR-16SRL-EXP	16x Serial Expansion Card
	ZPE Systems		2	NGM-L1-BASE-GSUB-100-MD	100 Managed Device License - 1 Year

326.4KW / 1SU REFERENCE DESIGN / "ACROSS THE AISLE"

Overhead View

Starline Busways

| DGX H100 | DGX H100 | DGX H100 | DGX H100 |

Legrand Cable Trays and Ladder Racks

ContainIT COLD AISLE CONTAINMENT

Legrand Cable Trays and Ladder Racks

| DGX H100 | DGX H100 | Mgt Rack | Mgt Rack | DGX H100 | DGX H100 |

Starline Busways

1 SU for DGX SuperPOD spanning two rows
See Legrand Bill of Materials (BOM) in Appendix

NOTE: Cable lengths vary according to the final layout and cable management approach taken. Please adjust the PNs and lengths according to your need. See Patch Cord Configurator elsewhere in this document.

326.4KW / 1SU REFERENCE DESIGN / LINEAR CONFIGURATION

NVIDIA DGX H100 SUPERPOD COMPUTE RACK

Front View

Qty	Component
8	Legrand Cabinets – T-Series or NVIDPD13
31	NVIDIA DGX H100
1	NVIDIA UFM Appliance
24	Raritan PX3-5008I2R-Q1
16	Raritan DX2-T1H1 Temp. & Humidity Sensor

DX2-T1H1 Raritan Temperature & Humidity Sensors
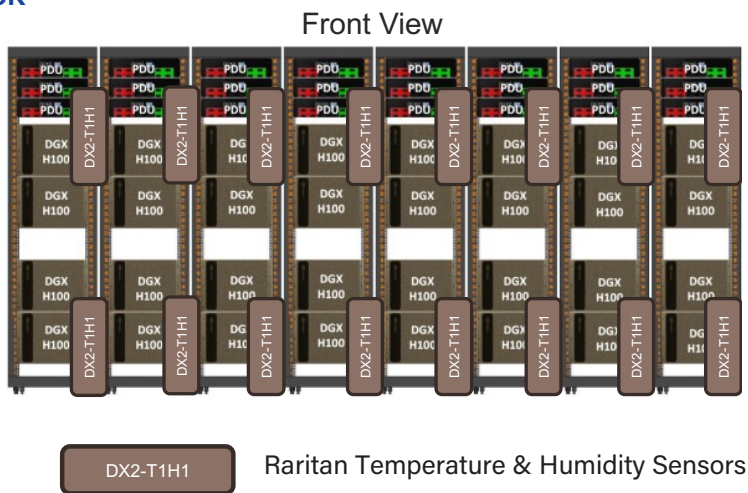
Note: Management racks not shown

NVIDIA DGX H100 SUPERPOD MANAGEMENT RACK

Management racks may be located between groups 4 racks (1SU, linear) or in groups of 2 racks (1SU across aisle).

- 4 QM9700 Switches (Spine)
- 8 QM9700 Switches (Leaf)
- 2 NVIDIA Compute Unified Fabric Manager (UFM) Management servers
- Storage management
- 4 Raritan PDUs: PX3-5747I2U-O1V2 or PX4-56A912U-C8E7V2 (in back of racks)
- Cabling
- 4 Raritan DX2-T1H1 sensors
- Legrand ZPE Systems Serial Console OOB Mgt or (NVIDIA BCM)

Additional QM9700 switches may be needed for in-band storage leaves and spines.
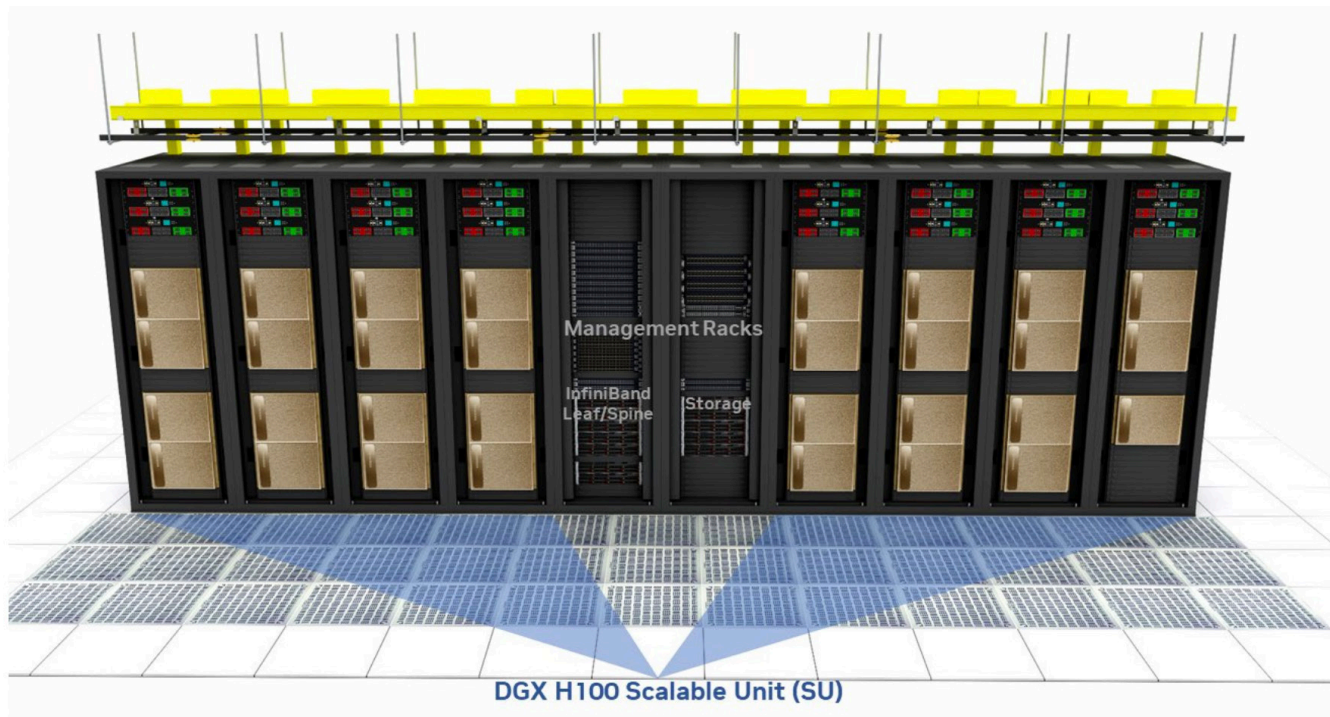
Source: NVIDIA DGX SuperPOD Reference Guide

POWERING THE DGX H100

DGX H100 FRONT VIEW WITH BEZEL REMOVED

Power button/ Status LED
Unit Identification (UID} button/ LED
Fault LED indicator

12 x Fan Modules

6 x Rack attachment screws

8 x 3.84 TB U.2 NVMe
Self-Encrypting Drives
(SED)

Front Console board
2 x USB 3. l, 1 x VGA,
Ambient temperature sensor
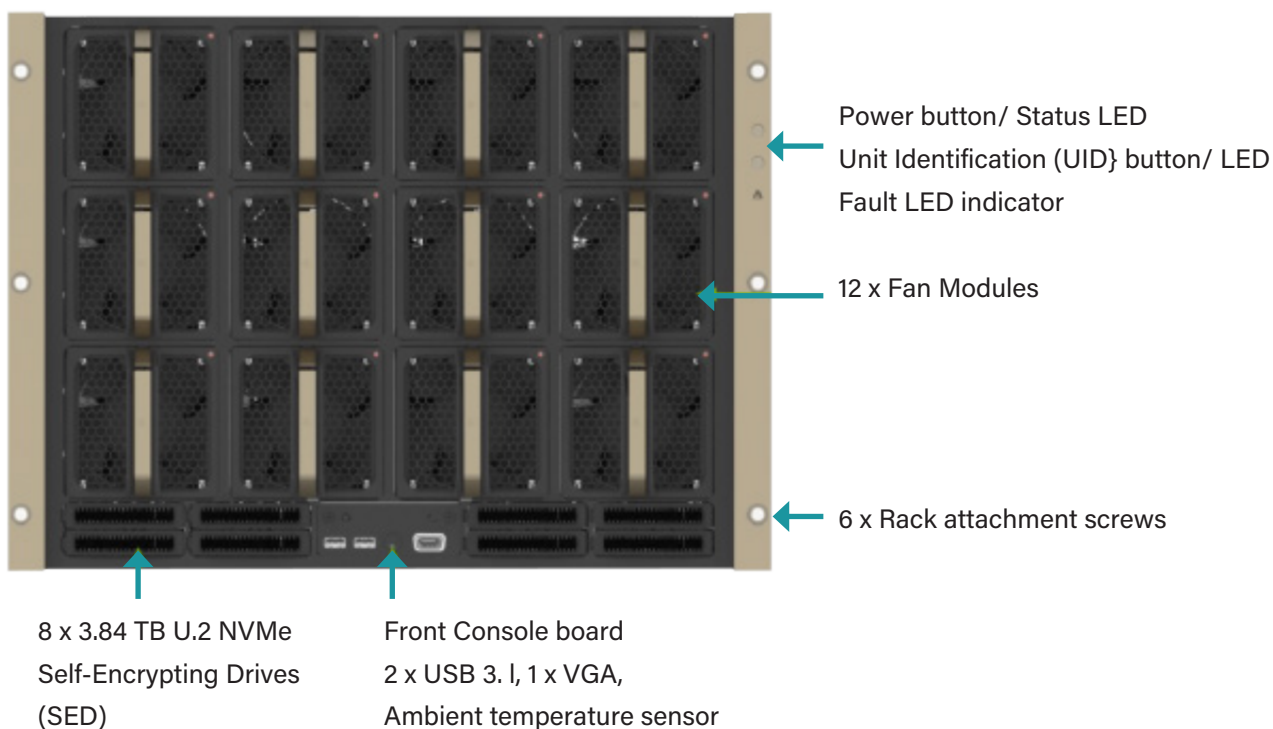
ENHANCED N+1 PHASE BALANCING

Temperature & Humidity Sensor
(Placed on front of rack, at 4U
and 42U)

rPDU = Raritan PX3-5008I2R-Q1
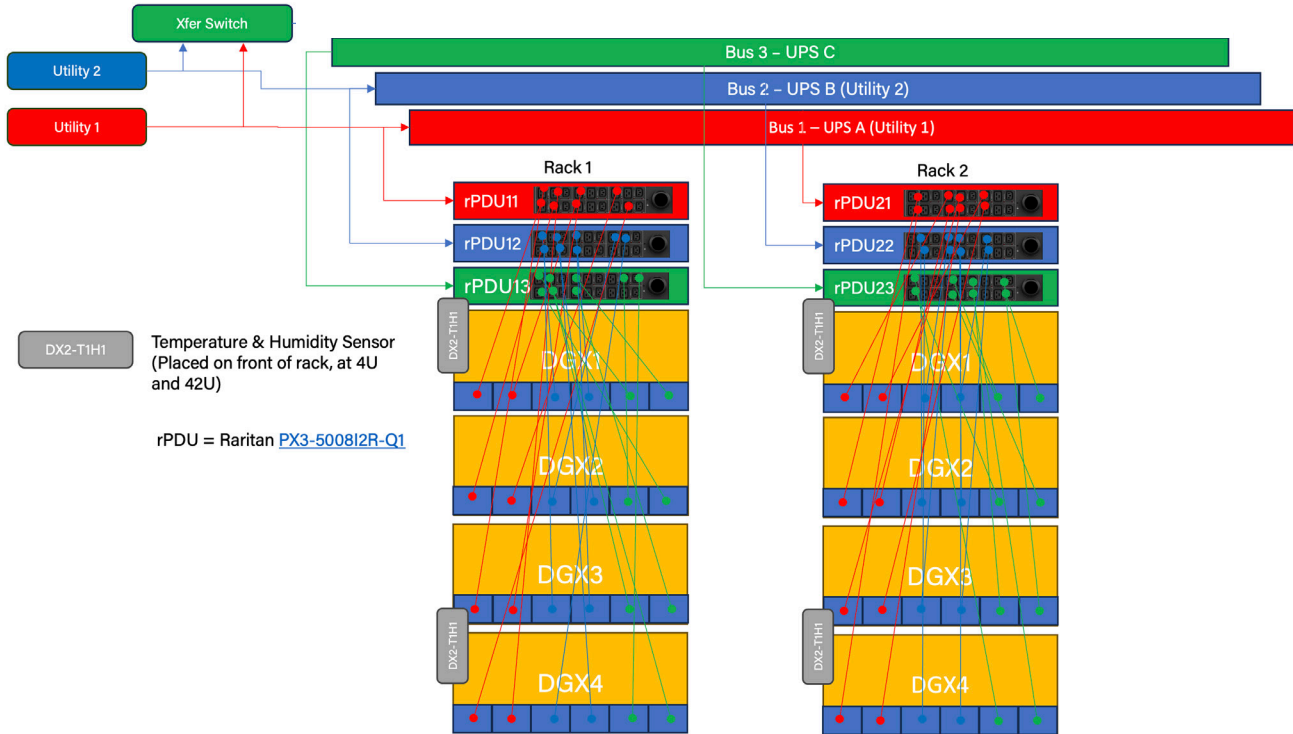
LOGICAL PHASE BALANCING TABLE FOR ENHANCED N+1 POWER

Rack	UPS/Gens	Floor PDU	Rack PDU	DGX H100 #1						DGX H100 #2					
				PSU1	PSU2	PSU3	PSU4	PSU5	PSU6	PSU1	PSU2	PSU3	PSU4	PSU5	PSU6
1	Power Path 1	PDU1	rPDU11	A	B					C	A				
1	Power Path 2	PDU1	rPDU12			A	B					C	A		
1	Power Path 3	PDU1	rPDU13					A	B					C	A
2	Power Path 1	PDU1	rPDU21	B	C					A	B				
2	Power Path 2	PDU1	rPDU22			B	C					A	B		
2	Power Path 3	PDU1	rPDU23					B	C					C	A

Rack	UPS/Gens	Floor PDU	Rack PDU	DGX H100 #3						DGX H100 #4					
				PSU1	PSU2	PSU3	PSU4	PSU5	PSU6	PSU1	PSU2	PSU3	PSU4	PSU5	PSU6
1	Power Path 1	PDU1	rPDU11	A	B					C	A				
1	Power Path 2	PDU1	rPDU12			A	B					C	A		
1	Power Path 3	PDU1	rPDU13					A	B					C	A
2	Power Path 1	PDU1	rPDU21	B	C					A	B				
2	Power Path 2	PDU1	rPDU22			B	C					A	B		
2	Power Path 3	PDU1	rPDU23					B	C					C	A

Source: NVIDIA DGX SuperPOD Reference Guide

VIEWS OF RARITAN PX3-5008I2R-Q1

Front

Back
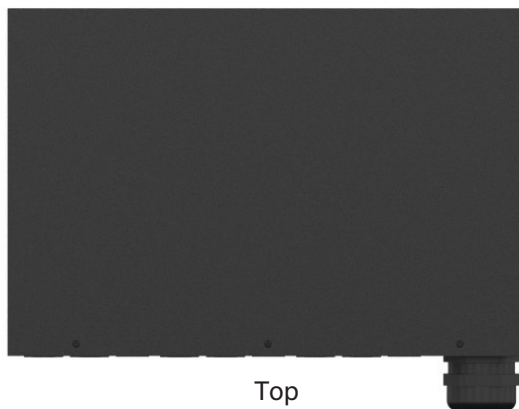
Top

## SINGLE LINE DIAGRAM OF RARITAN PX3-5008I2R-Q1 PDU
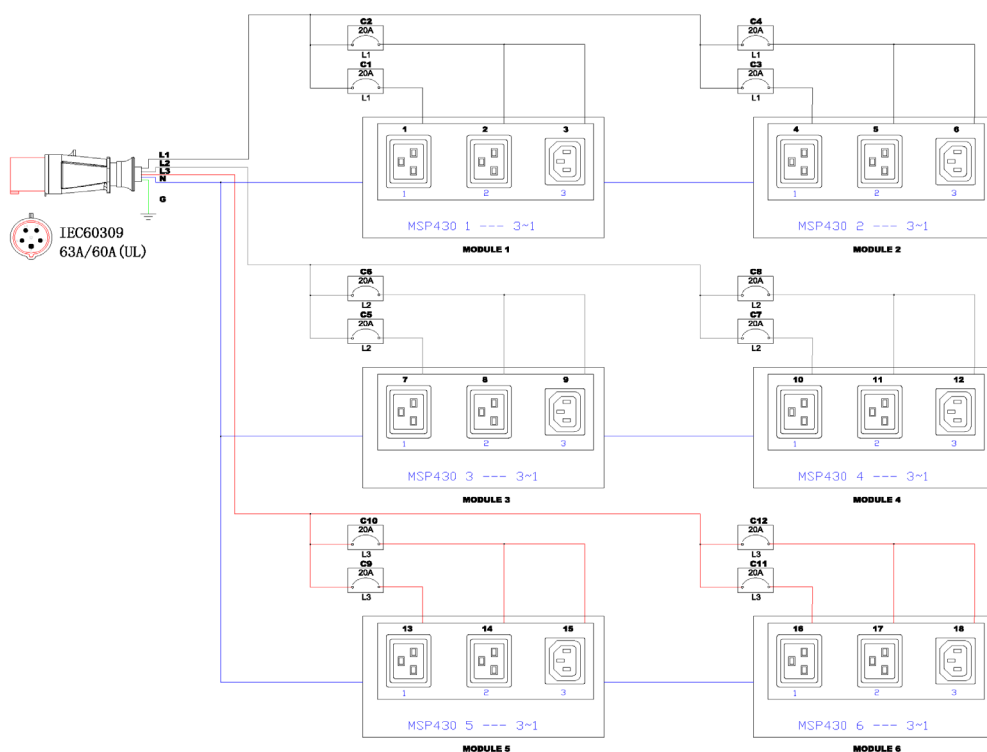
TEMPERATURE & HUMIDITY SENSORS

For each rack, two temperature sensors will be connected to Ethernet ports in the PDU closest to the front of the rack. The sensors must be mounted at the front of the rack, at the 4U position and at the 42U position. When facing the front of the rack, the sensors will be on the right side.

DX2-T1H1 - Temperature and Humidity Sensor 10 racks require 20 sensors
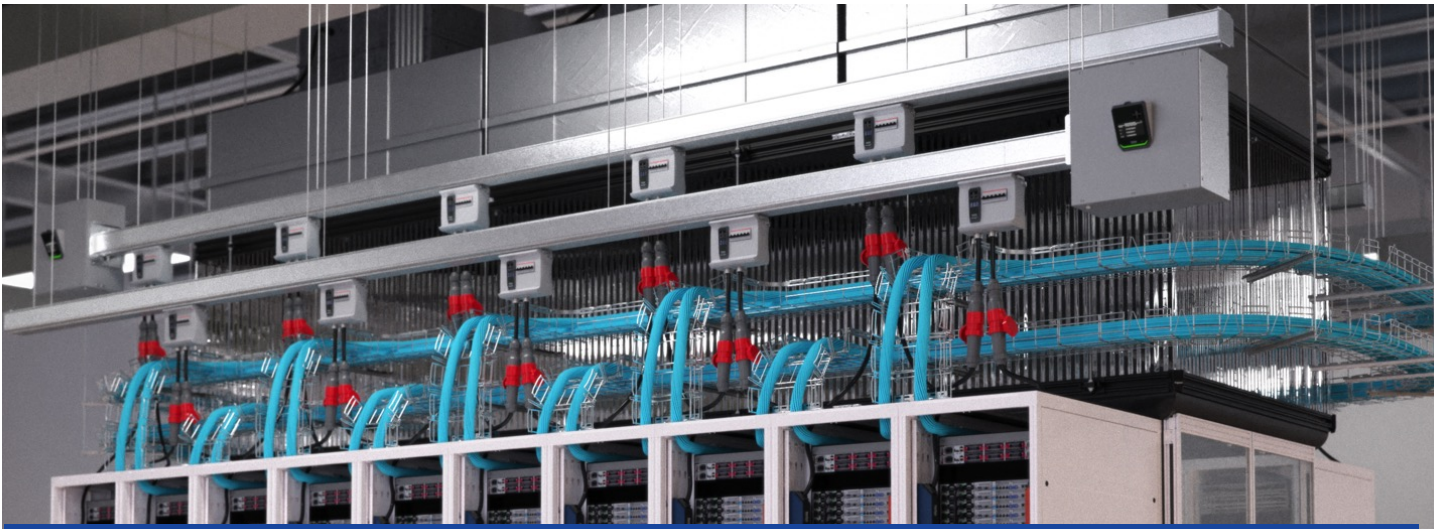
STARLINE TRACK BUSWAY

With AI servers demanding five times the power of traditional servers, busway solutions are designed to deliver flexible, reliable, and safe power. For instances where more than 1250 amps are required, multiple runs of busway can be installed, as recommended to support the SuperPOD.
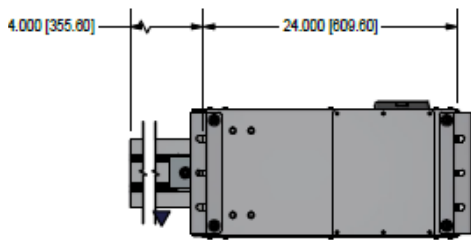
250-1250A TRACK BUSWAY ILLUSTRATION

Straight Section

Joint Kit

Busway End Feed

End Cap
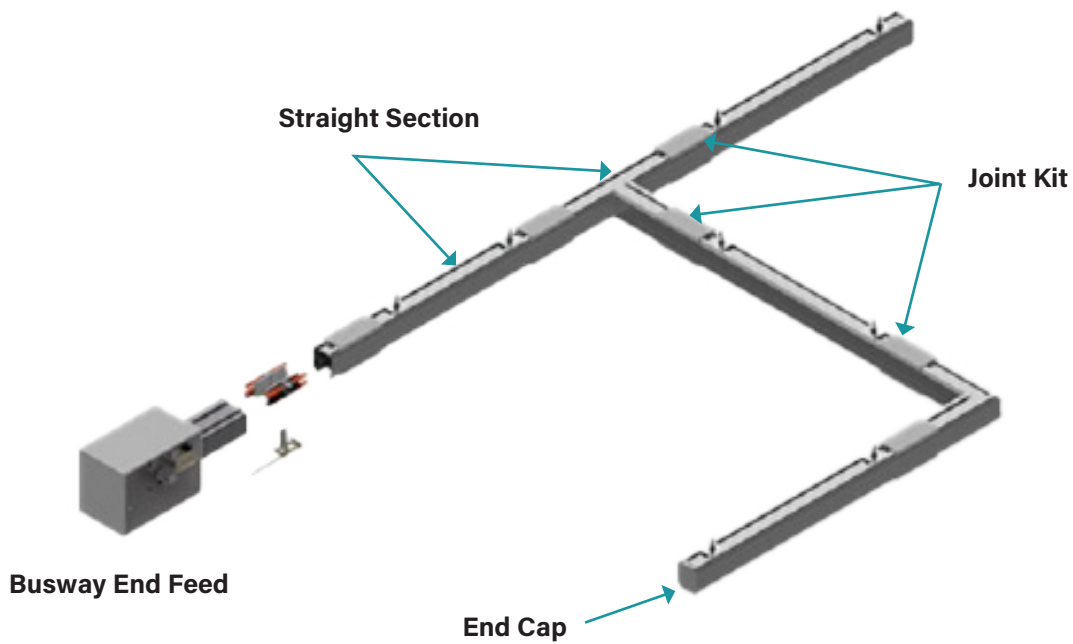
250-1250A TRACK BUSWAY TAP-OFF BOXES

800A STRAIGHT BUSWAY
US800T5H4S-1000C-STD0
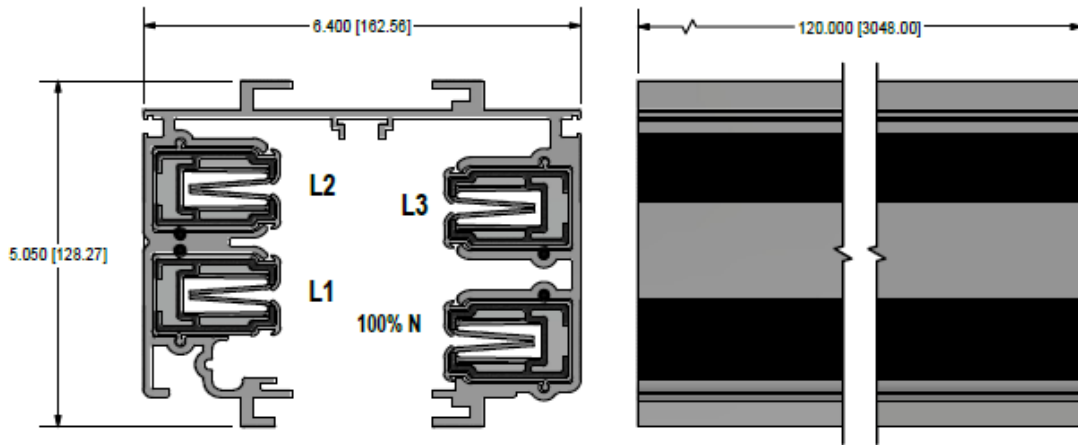
250-1250A TRACK BUSWAY END FEED
UF800T5H4S-BRFN-0102C-STD0-M73009
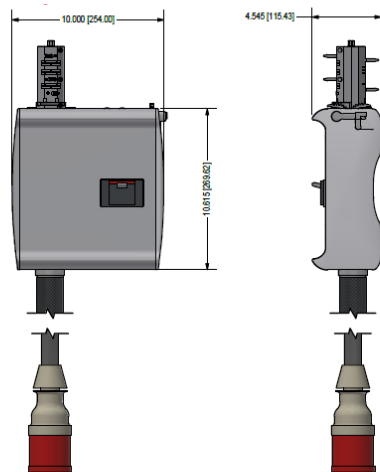
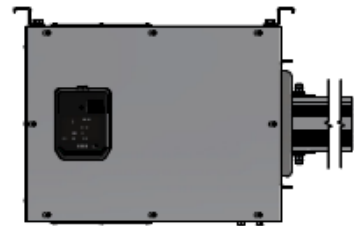## 250-1250A TRACK BUSWAY END FEED
UF800T5H4S-BRFN-0102C-STD0-M73009

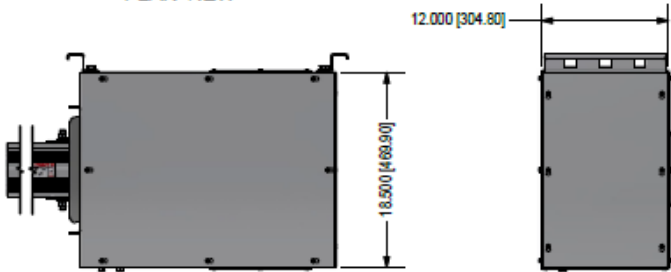4.000 [355.60]   24.000 [609.60]

PLAN VIEW

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1.325 [33.66]   .200 [5.08]
TYP

4X R.255 [R6.48]

LUG MOUNTING

6.400 [162.56]

5.050 [128.27]

L3   L2

L1

100% N

STUB VIEW

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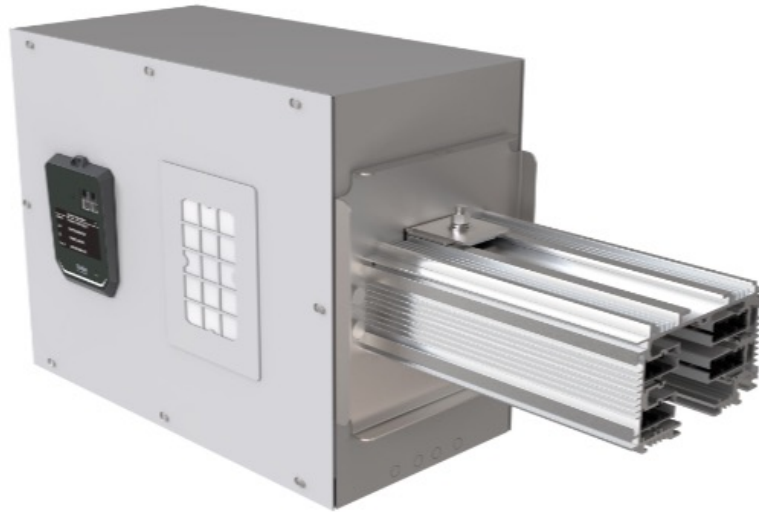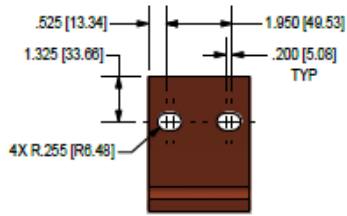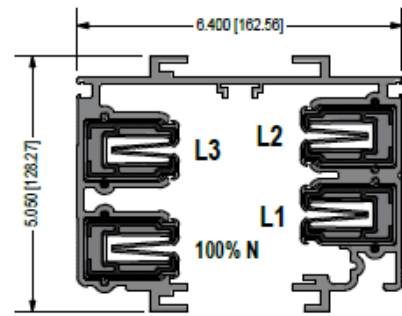
▲ - POLARIZED SIDE

TRACK BUSWAY JOINT KITS
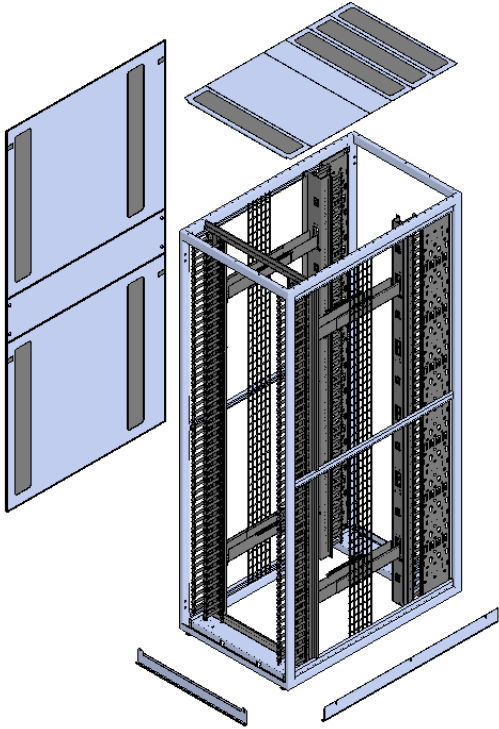**JK800T5-2**
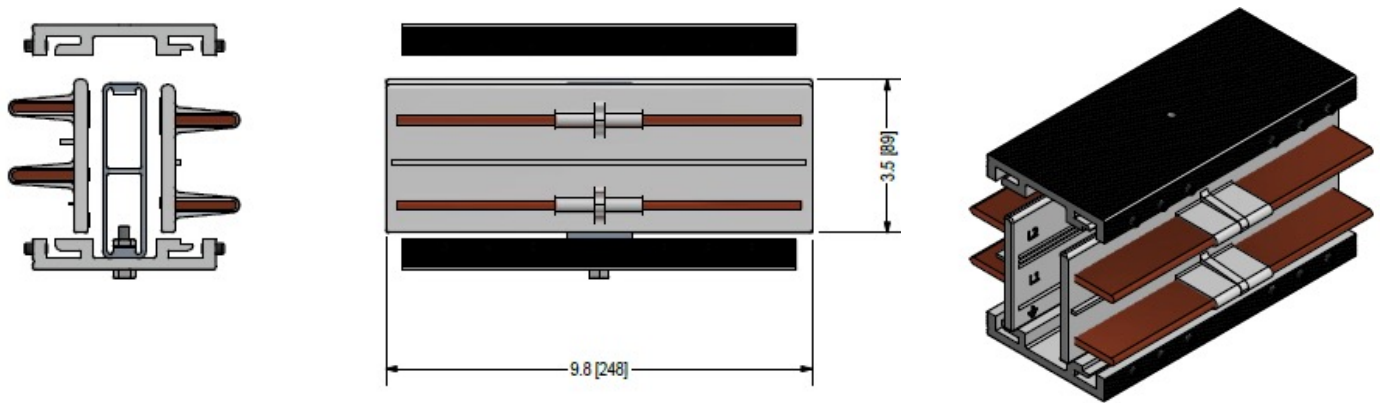
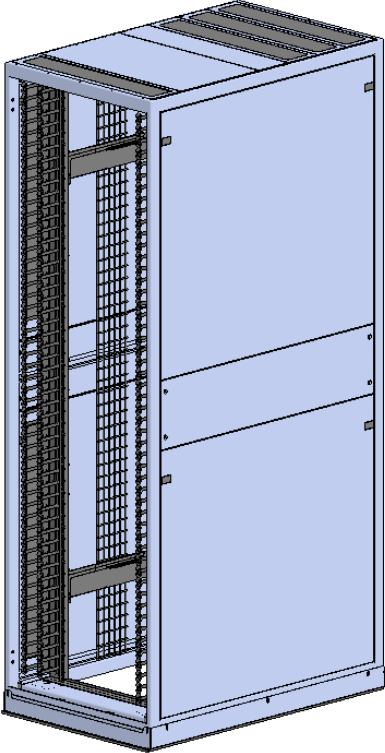**TRACK BUSWAY END CAP**
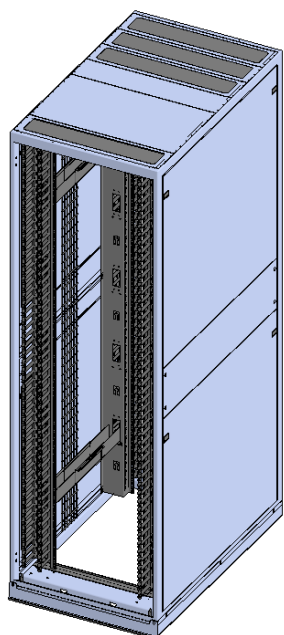**SEC800T5**
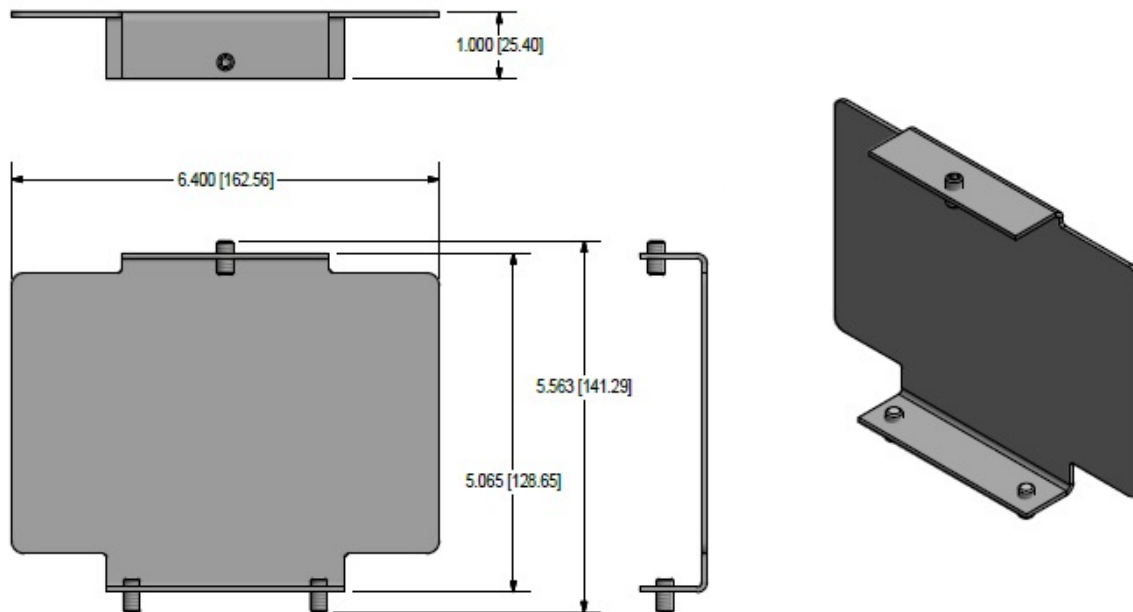
LEGRAND T-SERIES CABINETS

T-Series is built on a fully welded, tubular steel frame that offers a 5,000 lb. static and 4,000 lb. dynamic load rating, making it ideal for "Rack and Stack" applications in which cabinets are loaded with equipment off-site and rolled into place fully configured.
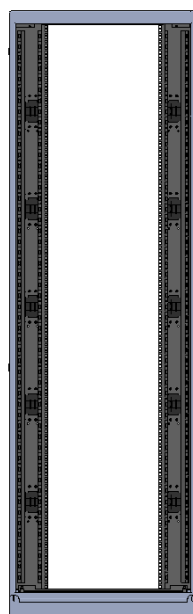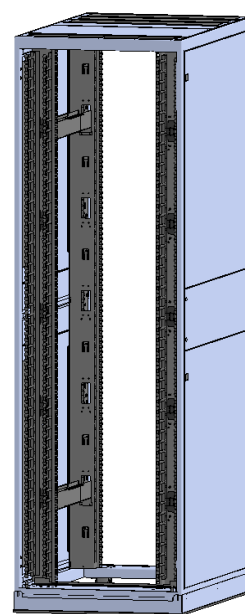

Exploded Isometric View

Front Right Enclosed View

Internal Base View | **Front View** | **Internal Isometric View**

Certification & Testing	T Series
UL2416	✔
UL Static Load Capacity	5,000 lbs.
ISTA-3B Dynamic Load Capacity (OnCasters)	3,000 lbs.
ISTA-3B Transit for Rack & Stack	✔
Standard iSTA-3B Rack & Stack Packaging	✔
ISTA-3B Legrand PDU Integration	✔
Functional Dynamic Test	✔
ROHS Compliant	✔

Frames	T Series
Height (RU)	42, 45, 48, 51, 52
Depth (with Standard and Split Doors)	45,8", 51.8", 57.8"
Depth (Frame Only)	42", 48", 54"
Width	24",30",31.5"
Custom Sizes Available	✔
Construction	Fully Welded
Frame Composition	Tubular Steel

Mounting Rails	T Series
19" EIA Mounting Rails	.375" Square Hole or #10-32 Tapped
23" EIA Mounting Rails	.375" Square Hole or #10-32 Tapped
Mounting Rails w/ Side Patching	✔

Below the Frame	T Series
High Load Casters	✔
Levelers	✔

Side / Divider Panels	T Series
Side Panels (Horizontally Split)	✔
Locking	✔
Non-locking	✔
Brushed Cable Passthrough	✔

Doors	T Series
Perforated Door Area (Airflow)	80%
Full Width	Mesh or Solid
Split	Mesh or Solid
Standard Swing Handle	Keyed Alike
Lock Options: Combination, Electronic, Biometric	✔

Top Panels	T Series
Top Panel	Single | Modular
Top Panel Entry	Grommet, Brush
Solid	✔
Two or Four Entry	✔

Air Flow Management	T Series
Air Dam Kits	✔
Floor Seals (Air skirts)	✔
Bottom Panels	✔

Cable Management	T Series
Power and Cable Management Bracket (PCM)	✔
Rail Attach Vertical Cable Fingers	✔
Qtr. Turn Accessories	✔
Front to Rear Cable Management	✔

COOLING - USYSTEMS CL20 RDHX

COLDLOGIC CL20 REAR DOOR HEAT EXCHANGER

Cooling Capacity- Maximum		5 Fan	6 Fan
Maximum Duty	kW	62	93
Air Flow (50Hz 230V)	m³/h (cfm)	6847 (4030)	8217 (4836)
DB Air On	°C (°F)	50 (122)	58 (136)
DB Air Out	°C (°F)	20 (68)	20 (68)
Water In	°C (°F)	14 (57.2)	14 (57.2)
Water Out	°C (°F)	25 (77)	30 (86)
Volume Fluid Flow	M³h (l/s0 US Gal/m	5 (1.4) / 22	5 (1.4) / 22
Fluid Velocity	m/s (ft/s)	0.99 (3.25)	0.82 (2.7)

COLDLOGIC CL20 REAR DOOR HEAT EXCHANGER

To Suit:		CL20 (including interface frame)					
		42U 5 Fan		48U* 5 Fan		48U* 6 Fan	52U 6 Fan
		600w	800w	600w	800w	800w	800w
Height	mm (")	2040 (80.3)		2307 (90.8)		2307 (90.8)	2485 (97.8)
Width	mm (")	596 (23.5)	796 (31.3)	596 (23.5)	796 (31.3)	796 (31.3)	796 (31.3)
Depth	mm (")	380 (15)					
Fits Rack	U x mm (")	42 x 600 (23.6)	42 x 800 (29.5)	48* x 600 (23.6)	48* x 800 (29.5)	48* x 800 (29.5)	52 x 800 (29.5)
Dry Weight	kg (lb)	86 (189.6)	112 (247)	94 (207.3)	126.5 (278.9)	137.9 (304.1)	143.3 (316.2)
Dry Weight (including frame)	kg (lb)	112.7 (248.5)	140.7 (310.2)	123.3 (271.9)	157.8 (347.9)	169.2 (373.1)	176.4 (389)
Wet Weight (including frame)	kg (lb)	123.7 (272.8)	151.7 (334.5)	134.3 (296.1)	169.8 (374.4)	184.6 (407)	191.8 (422.9)
Paint (fi nalised on order)		RAL 9003 (White)					
		RAL 9005 (Black)					
Communication Protocol		Modbus over TCP/IP					
		(BACnet, SNMP optional)					
Hinge Side		Left-Hand Side (standard)					
		Right-Hand Side (available on request)					
Connections	mm (")	25 (1)					
Water Volume Capacity	L (USGal)	11 (2.9)				15.4 (4)	
Maximum Rated Current	A	12.5					

CL20 Combined Fan Performance **				
Type			Backward Curved Centrifugal	
Number of fans			5	6
Air Flow	m³/h (CFM)	30%	2135 (1257)	2553 (1502)
		70%	5262 (3097)	6293 (3703)
		100%	6871 (4044)	8217 (4836)
Current 50Hz 230v / 60Hz 208v	A	30%	0.62 / 0.72	0.79 / 0.87
		70%	3.71 / 4.09	4.46 / 4.92
		100%	7.54 / 8.33	9.04 / 9.98
Power Input 50Hz 230v	W	30%	51	61
		70%	398	478
		100%	845	1014
Total fan noise	dB	30%	69	67
		70%	85	83
		100%	90	89

Typical 600w

DETAIL D
Please note 600w doors have formed fan trim for handle clearance

SECTION A-A
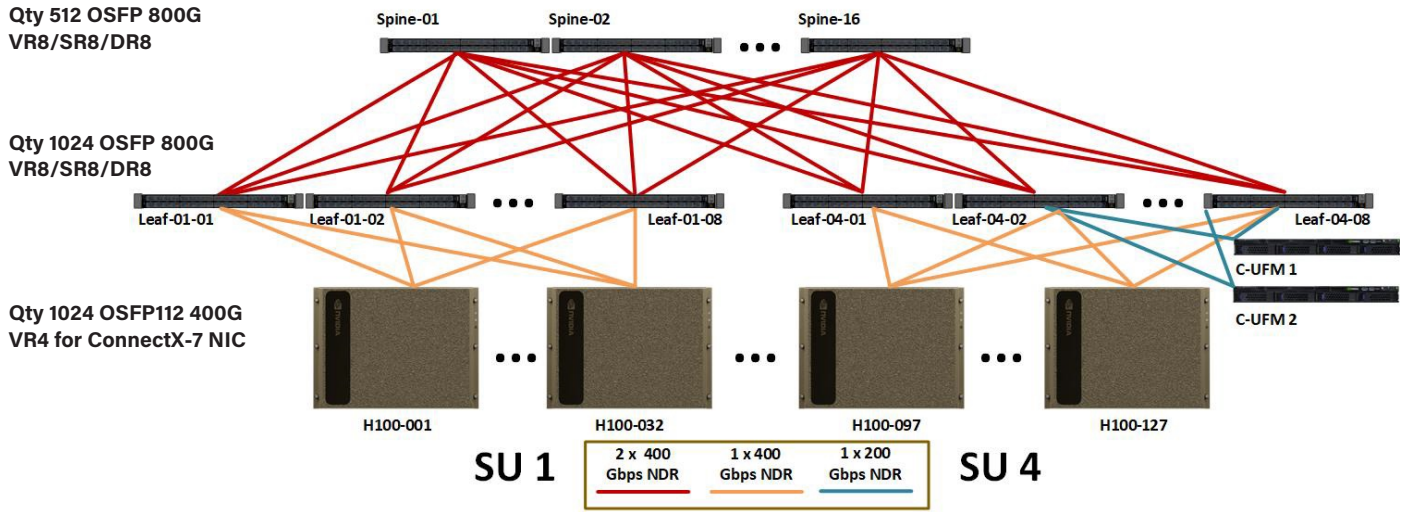
SECTION B-B

SECTION C-C
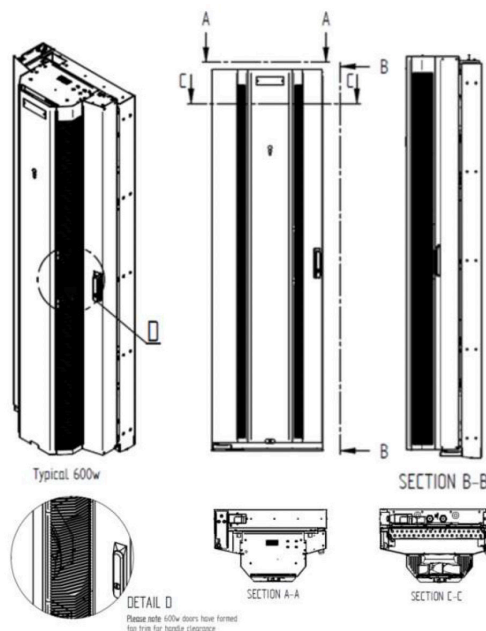
*48U RDC, and 48U frame fit 47/48U rack

**Based on positive air pressure environment. PF 1. Others may vary

TRANSCEIVERS

NVIDIA COMPUTE FABRIC ARCHITECTURE – SU 4

Qty 512 OSFP 800G VR8/SR8/DR8

Qty 1024 OSFP 800G VR8/SR8/DR8

Qty 1024 OSFP112 400G VR4 for ConnectX-7 NIC

2 x 400 Gbps NDR	1 x 400 Gbps NDR	1 x 200 Gbps NDR

SU 1 ... SU 4

Source: NVIDIA DGX SuperPOD: Next Generation (H100) Scalable Infrastructure for AI Leadership

acclAIM

LEGRAND TRANSCEIVER PART NUMBERS

P/N	Description	Web link	Use Case
MMA4Z00-NS-A	800G OSFP Open Finned Top SR8, up to 100m OM4, Dual MPO-12 APC, NVIDIA compatible	https://approvednetworks.com/products/800gbase-sr8-osfp-finned-top-infiniband-ndr-mmf-850nm-100m-ddm-transceiver.html	Used in the 800G InfiniBand or Ethernet switch
MMS4X00-NM-CLT-A	800G OSFP Closed Finned Top DR8, SMF, up to 500m, Dual MPO-12 APC, DDM, NVIDIA compatible	https://approvednetworks.com/products/800gbase-dr8-osfp-closed-top-infiniband-ndr-smf-1310nm-500m-transceiver.html	Used in the 800G InfiniBand or Ethernet switch
MMS4X50-NM-A	800G OSFP Finned Top 2x FR4, SMF, up to 2km, Dual Duplex LC, Nvidia Compatible	https://approvednetworks.com/products/800gbase-2x-fr4-osfp-open-finned-top-transceiver.html	Used in the 800G InfiniBand or Ethernet switch
AN-O800G-FIN-2LR4	800G OSFP Finned Top 2x LR4, SMF, up to 10km, Dual Duplex LC, MSA compatible	https://approvednetworks.com/products/800gbase-2x-lr4-osfp-open-finned-top-transceiver.html	Used in the 800G InfiniBand or Ethernet switch
AN-O800G-FIN-DR8P	800G OSFP Finned Top DR8+, SMF, up to 2km, Dual MPO12 APC, MSA compatible	https://approvednetworks.com/products/800gbase-dr8-osfp-open-top-2x-400g-dr4-parallel-smf-dual-mpo-12-transceiver.html	Used in the 800G InfiniBand or Ethernet switch
AN-O800G-FIN-DR8PP	800G OSFP Finned Top DR8++, SMF, up to 10km, Dual MPO12 APC, MSA compatible	https://approvednetworks.com/products/800gbase-dr8-osfp-finned-top-2x-400g-dr4-parallel-smf-dual-mpo-12-transceiver.html	Used in the 800G InfiniBand or Ethernet switch

P/N	Description	Web link	Use Case
MMA4Z00-NS400-A	400G OSFP112 Flat Top VR4, up to 50m OM4, MPO-12 APC, NVIDIA compatible	https://approvednetworks.com/products/400gbase-vr4-osfp112-infiniband-ndr-mmf-850nm-50m-ddm-transceiver.html	Used in NVIDIA ConnectX-7 NIC
MMS4X00-NS400-A	400G OSFP112 Flat Top DR4, SMF, up to 500m, MPO-12 APC, NVIDIA compatible	https://approvednetworks.com/products/400gbase-dr4-osfp112-flat-top-cmis-5-2-smf-1310nm-500m-transceiver.html	Used in NVIDIA ConnectX-7 NIC
MMA1Z00-NS400-A	400G QSFP112 Flat Top VR4, up to 50m OM4, MPO-12 APC, NVIDIA compatible	https://approvednetworks.com/products/400gbase-sr4-qsfp112-flat-top-transceiver-mmf-850nm-100m-transceiver.html	Used in NVIDIA ConnectX-7 NIC or BlueField-3 DPU

▪ The rapid adoption of 800G optics is driven by the need for non-blocking networking performance, increased port density, and improved scalability in AI-driven infrastructures.

▪ The table above includes selected 800G and 400G optical transceivers designed for high-bandwidth AI workloads, ensuring low latency, high-density connectivity and scalability.
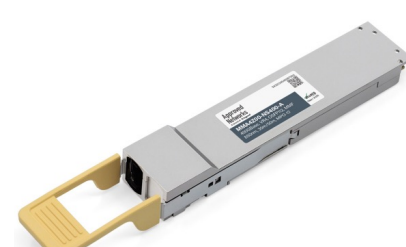
LEGRAND TRANSCEIVERS − 800G, 400G

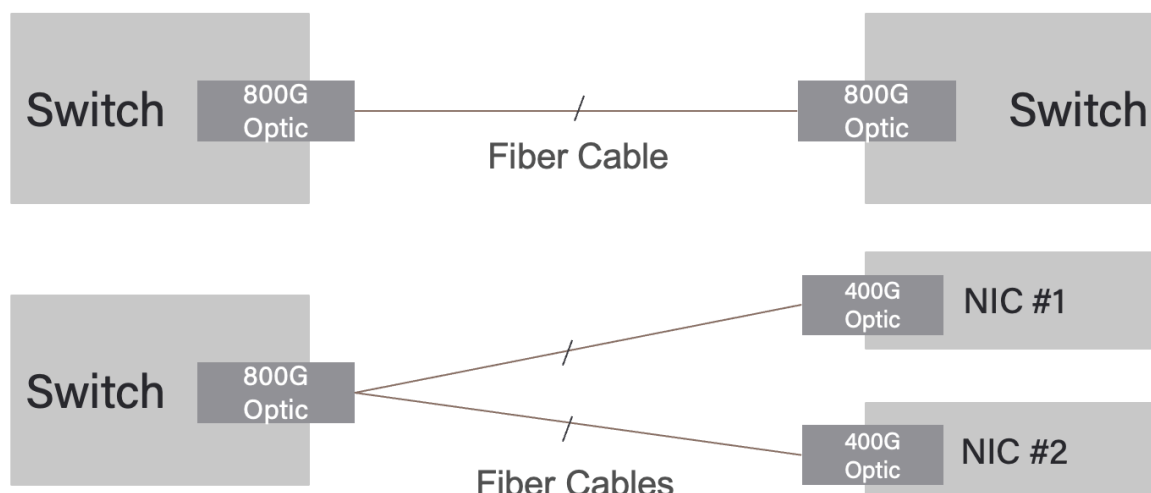**800GBASE-SR8 OSFP Closed Top InfiniBand NDR MMF 850nm 100m DDM**

**800GBASE-SR8 OSFP Finned Top InfiniBand NDR MMF 850nm 100m DDM**

400GBASE-VR4 OSFP112 InfiniBand NDR MMF 850nm 50m DDM

USE CASE DIAGRAM

AI workloads demand ultra-high-speed interconnects to support parallel processing. This diagram illustrates how 800G and 400G transceivers are integrated into an AI fabric, highlighting their role in high-speed interconnects and spine-leaf architectures.
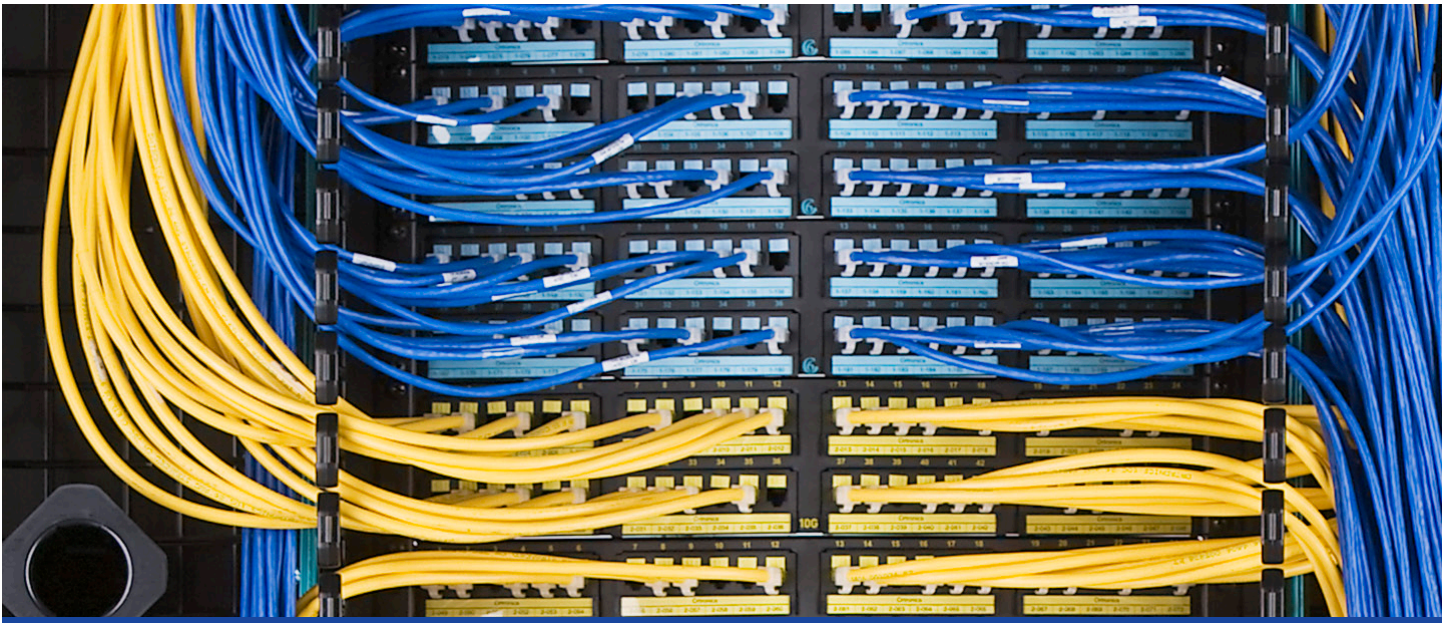
COPPER PATCH CORDS

	Model	P/N	Description
Patch Cords	Q-Series	576-A135-25	Cat6a, Q-Series, Black, 25 ft Patch cord
Patch Cords	Q-Series	576-A110-25	Cat6a, Q-Series, Blue, 25 ft Patch cord
Patch Cords	Q-Series	576-A120-25	Cat6a, Q-Series, Green, 25 ft Patch cord
Patch Cords	Clarity	RDC61000-25	Cat6a, Clarity, Black, Reduced diameter, 25 ft Patch cord
Patch Cords	Clarity	RDC61006-25	Cat6a, Clarity, Blue, Reduced diameter, 25 ft Patch cord
Patch Cords	Clarity	RDC61005-25	Cat6a, Clarity, Green, Reduced diameter, 25 ft Patch cord
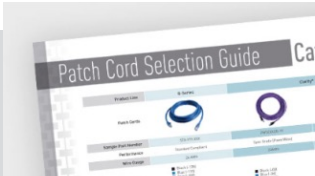
Find out more information about our patch cord offering:
Download the Patch Cord Selection Guide here.
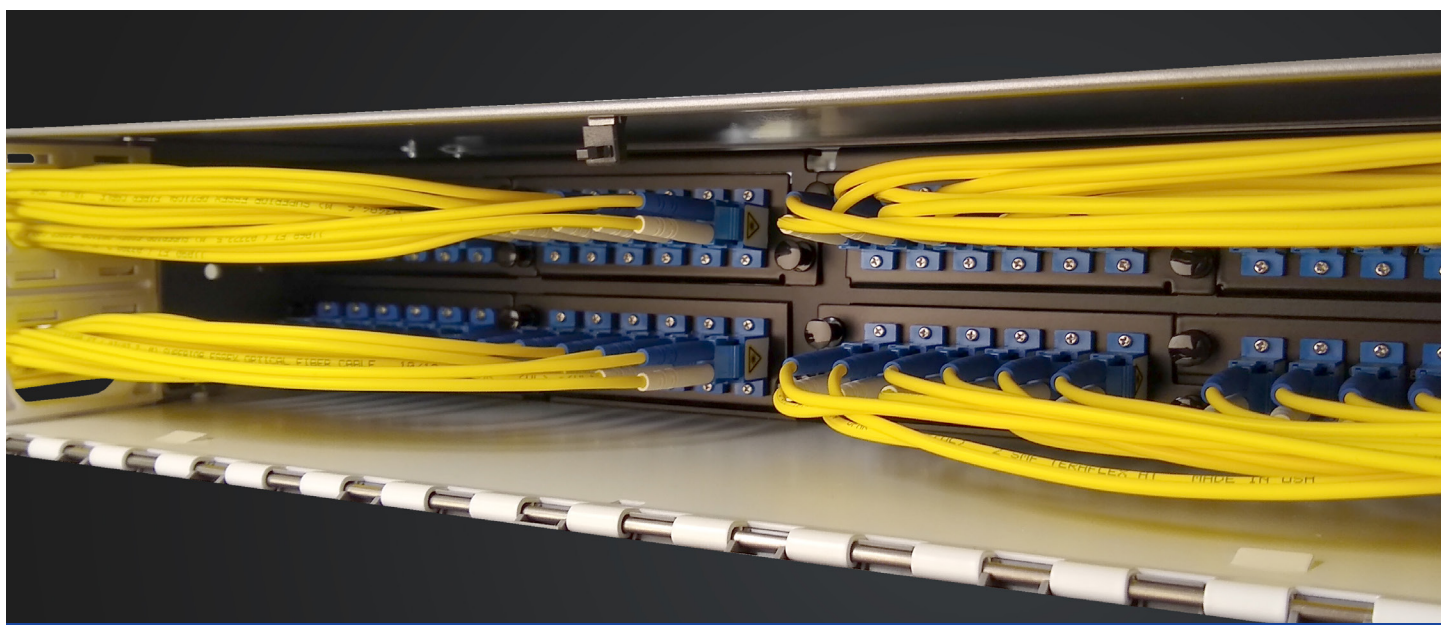
FIBER

Performance Level		Connector	Connector	Polarity	Cable Diameter	Fiber Type	Jacket Color	Jacket Type	Packaging	Length	Unit of Measure	Concatenated Part Number
PN#	L3 -	KA	01	B	2	O	Y	2	1	010	F	L1-KA01B2OY21010F

Performance Level

L1 - CORE

L3 - ULTRA

L4 - QUANTUM

Cable Diameter

2 - 2.0mm

3 - 3.0mm

Jacket Color

A - Aqua

Y - Yellow

Connectors

KA - Rose

KB - White

KC - Yellow

KD - Red

KE - Orange

KF - Violet

KG - Gray

KH - Blue

KJ - Brown

KK - Aqua

KL - Magenta

KM - Green

KU - Black

01 - Standard LC

02 - Standard SC

Note: When specifying with a Standard LC or SC (Non-Keyed), the LC or SC will be a standard connector, and the Boot will be the color matched to the Keyed LC or SC connector.

Jacket Type

2 - Riser Duplex

D - Plenum Duplex

1 - Riser Simplex

S - Plenum Simplex

Packaging

0 - Bag, NO Test Results

1 - Bag, Test Results

Polarity

B - A-B (Clipped) Standard

A - A-A (Clipped)

N - Non-Clipped

Fiber Type

E - OM4

D - OM3

J - OS2 Standard

O - OS2 Quantum

Unit of Measure

F - Feet

M - Meters

Find out more information about our patch cord offering:

Download the full Keyed LC Fiber Solutions brochure here.

LEGRAND® KEYED LC FIBER SOLUTIONS
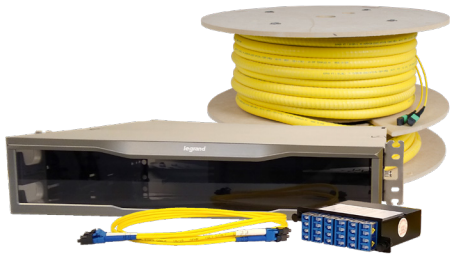
Infinium Quantum

Infinium Ultra
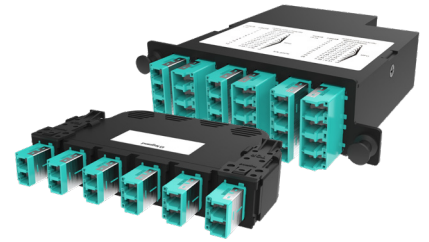
Infinium Core

## LEGRAND INFINIUM QUANTUM FIBER SOLUTIONS

Used whenever density or signal strength are critical to your data center success.

Lowest Total Channel Connection Loss – 67% Improvement Over Standard Systems

- Single-mode total channel connection loss: 0.75dB
- Single-mode total channel connection return loss: 49dB
- Multimode total channel connection loss 0.75dB
- Multimode total channel connection return loss: 34dB

INFINIUM QUANTUM HDCA SINGLE-MODE 12 FIBER MTP TO DUPLEX LC

Part Numbers	Description	Fiber #	Polarity	Form Factor
L4-3535B2OYx1xxxx	Infinium Quantum LC to LC Duplex DFX Fiber OS2 Yellow Patch	2	A-B	Duplex
LMH-LC12J-1A3UN	Infinium Quantum HDCA Cassette, 12 Fiber, LC Duplex to MTP(M), OS2, Universal Polarity	12	Universal	HDJ
Q7171BxxxxOxxxxxxx	Infinium Quantum OS2 Non-Pinned MTP Trunk		B:1-1	Trunk
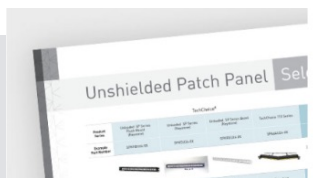
Find out more information about our patch panel offering:
Download the Unshielded Patch Panel Selection Guide here.

OOB MANAGEMENT

The ZPE Systems NodeGrid provides an alternative solution to the NVIDIA-based OOB management network documented in NVIDIA DGX SuperPOD: Next Generation Scalable Infrastructure for AI Leadership – Reference Architecture

Out-of-band management provides a mean for securely updating the firmware of the compute, storage, and networking systems comprising the SuperPOD as well as enabling remote administration capabilities such as device configuration and, new user setups even when the main systems are experiencing issues. It enables a control plane to exist separately from the production networks. It connects the management ports of all devices including DGX and management servers, storage, networking gear, rack PDUs, and all other devices.

A DGX SuperPOD utilizes four network fabrics:

- Compute fabric
- Storage fabric
- In-band management network
- Out-of-band management network
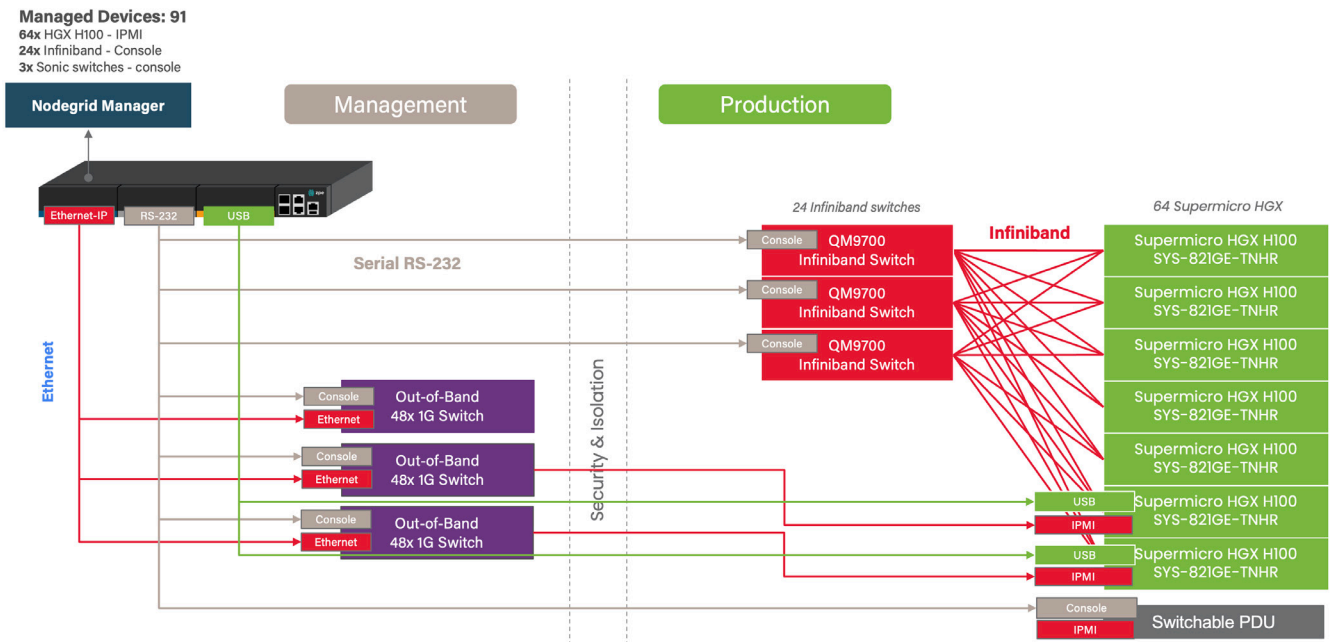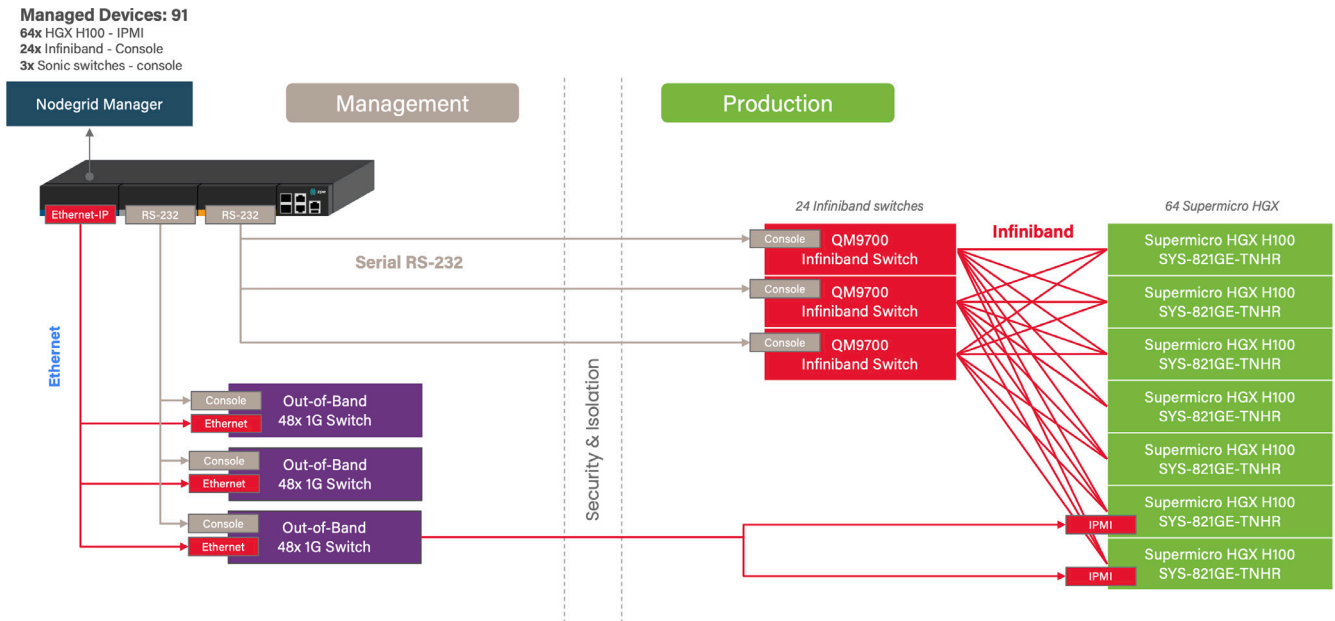
OUT OF BAND MANAGEMENT X 1 SU
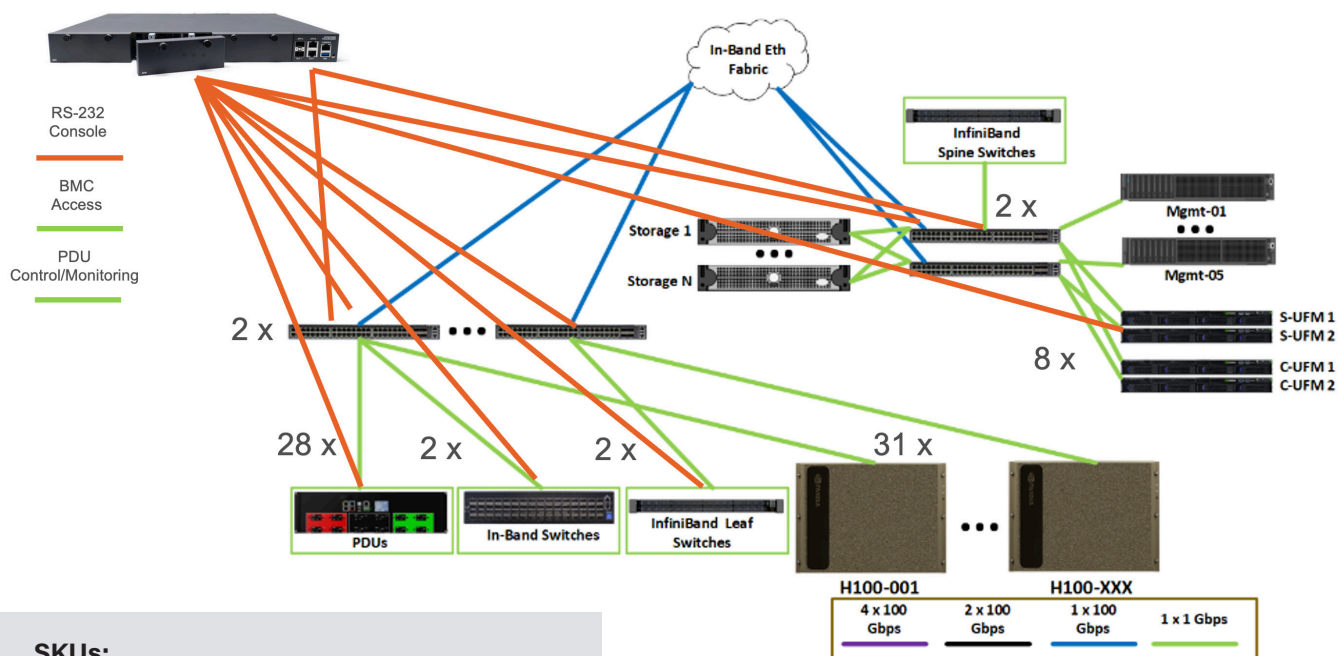
SKUs:

1 x ZPE-NSR-816-DAC

3 x ZPE-NSR-16SRL-EXPN

1 x ZPE-NGM-L1-BASE-GSUB-100-MD

1 x ZPE-NGM-FL-MON-GSUB-050

ISOLATED MANAGEMENT INFRASTRUCTURE

Design for 64 node AI Cluster with Supermicro/NVIDIA

Managed Devices: 91
64x HGX H100 - IPMI
24x Infiniband - Console
3x Sonic switches - console

Nodegrid Manager	Management	Production

Ethernet-IP | RS-232 | RS-232

Serial RS-232

Ethernet

Console / Ethernet — Out-of-Band 48x 1G Switch
Console / Ethernet — Out-of-Band 48x 1G Switch
Console / Ethernet — Out-of-Band 48x 1G Switch

Security & Isolation

24 Infiniband switches

Console QM9700 Infiniband Switch
Console QM9700 Infiniband Switch
Console QM9700 Infiniband Switch

Infiniband

64 Supermicro HGX

Supermicro HGX H100 SYS-821GE-TNHR (×7)
IPMI

Managed Devices: 91
64x HGX H100 - IPMI
24x Infiniband - Console
3x Sonic switches - console

Nodegrid Manager	Management	Production

Ethernet-IP | RS-232 | USB

Serial RS-232

Ethernet

Console / Ethernet — Out-of-Band 48x 1G Switch
Console / Ethernet — Out-of-Band 48x 1G Switch
Console / Ethernet — Out-of-Band 48x 1G Switch

Security & Isolation

24 Infiniband switches

Console QM9700 Infiniband Switch
Console QM9700 Infiniband Switch
Console QM9700 Infiniband Switch

Infiniband

64 Supermicro HGX

Supermicro HGX H100 SYS-821GE-TNHR (×5)
USB / IPMI — Supermicro HGX H100 SYS-821GE-TNHR
USB / IPMI — Supermicro HGX H100 SYS-821GE-TNHR
Console / IPMI — Switchable PDU

ZPE Value

Speed of recovery is critical; if one H100 server fails, the whole cluster is rendered useless. With outages so costly, quick recovery is key.

ZPE SKUs:

1x - ZPE-NSR-816-DDC (Nodegrid Hive SR, 8 Core, 16GB, DDC)

1x - ZPE-NSR-16ETH-EXP (Ethernet Expansion Card)

2x - ZPE-NSR-16SRL-EXP (Serial Expansion Card)

1x - NGM-L1-BASE-GSUB-100-MD (100 Managed Device License - 1 Year)

[Please note that more managed devices should be ordered for PDUs]

IMI DESIGN FOR 64 NODE AI CLUSTER
WITH SUPERMICRO/NVIDIA (NETWORK EQUIPMENT ONLY)

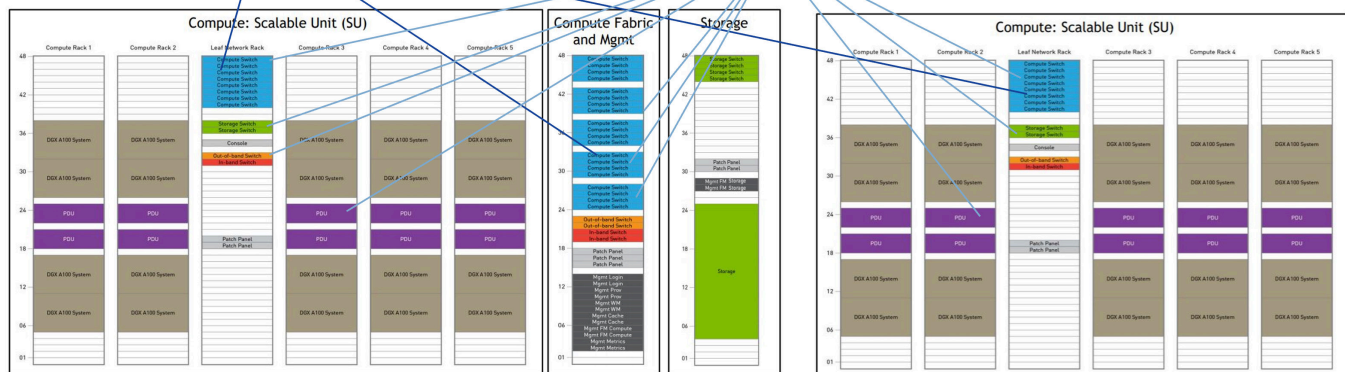
ZPE Nodegrid Net SR

1x ethernet card to 64 IPMI target HGX H100
Via Sonic switch

2x serial console cards to 27 console ports
- 3x sonic switch and
- 24x QM9700 Switches

BOM:
1x - ZPE Net SR
1x - ZPE 16x Eth expansion
2x - ZPE 16x serial expansion
1x - 100 managed device license

IMI DESIGN FOR 64 NODE AI CLUSTER
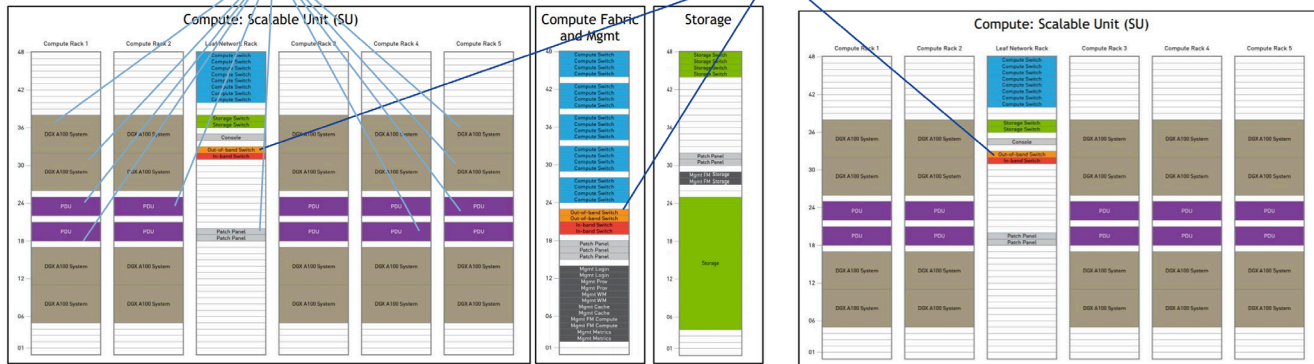## WITH SUPERMICRO/NVIDIA (NETWORK, STORAGE & AI SERVER EQUIPMENT)

ZPE Nodegrid NSC

ZPE Nodegrid Net SR

Serial console to every device

1x ethernet card to 64 IPMI target HGX H100
Via Sonic switch

CONTACT US

HAVE A QUESTION ABOUT AI FOR A LEGRAND PRODUCT SPECIALIST?

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- Customized solution design
- Rationalization and development of BOM
- Simplified order processing and logistics support
- Installation services, commissioning services
- Product lifetime support

[Submit your AI query here](#)

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legrand.us/ai-data-center