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NVIDIA REFERENCE GUIDE

The NVIDIA DGX SuperPOD™ with NVIDIA DGX™ H100

The system provides the computational power necessary to train today's state-of-the-art deep learning (DL) models and to fuel innovation well into the future. The DGX SuperPOD delivers groundbreaking performance, deploys in weeks as a fully integrated system, and is designed to solve the world's most challenging computational problems.

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We are a Dutch manufacturer of Power Distribution Units, crafting each PDU to bespoke specifications at no additional cost or extended lead times. All our products are fully engineered and produced in-house. Our objective is to be the most flexible PDU manufacturer worldwide.

This document provides an overview of the installation options of Schleifenbauer example Power Distribution Unit for DGX SuperPOD H100 server rack situations.

The information contained in this guide is intended for IT and data centre professionals who are generally familiar with power distribution units inherent to data centre deployments.

Data Centre Power Configuration

The DGX SuperPOD is typically deployed with a rack density of four DGX H100 systems per rack, although deployments with lower rack densities are possible. Combining international norms on voltages and circuit protection yields common power provisioning patterns for data centres. A DGX H100 power supply system using components certified for 200–240 VAC can be deployed worldwide. Connectors, fuses, circuit breakers, and wire gauges selected at compatible steps ease certification and installation.

The Schleifenbauer rack power distribution units in this example document derive 200–240 VAC single-phase power by dividing a three-phase input power circuit into three individual single-phase circuits, and further divide this into 6 branches of 16A each. Any other PDU configuration can be customized for you.

The table below identifies the most common supply/distribution voltages and currents that can support the defined SU deployment patterns.

Phase	Distribution Voltage	Line Voltage	Amps	Breaker Derating	Circuit Capacity kW[1]	Maximum Supported DGX H100 Systems per Rack[2,3]	Peak Server Demand per Circuit kW[2]	Stranded Capacity at Peak Demand kW[2]
1Φ	230	230	63	100%	13.7	2	10.2	3.5
3Φ Delta	208	208	60	80%	32.8	4	20.4	12.4
3Φ Wye	400	230	32	100%	21	4	20.4	0.6
3Φ Wye	415	240	32	100%	21.8	4	20.4	1.4
3Φ Wye	415	240	60	80%	32.7	4	20.4	12.3

1. 0.95 power factor.
2. Based on a three circuit N+1 power provisioning scheme where no circuit carries more than 50% of the load.
3. Rack densities greater than 4 DGX H100 Systems are not recommended, due to thermodynamic considerations

The preferred power for high-density deployment patterns is 415 VAC, 32A, three-phase, N+1. The design can be modified to support other supply voltage schemes, depending on the number of servers per rack. Power supplied to each rPDU must originate from separate data centre floor-mounted or busway PDUs. All power feeds must be supported by facility-level UPS and generator back-up power to mitigate the risk of power loss.

Power Redundancy

Generally, the data centre should meet or exceed Uptime Institute Tier 3 design standards, or alternatively the TIA942-B Rated 3 or EN50600 Availability Class 3 design standards, including concurrent maintainability and no single point of failure.

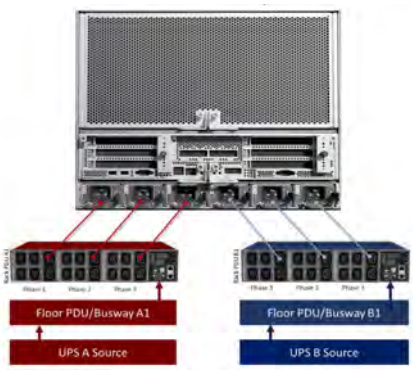
In addition to those foundational standards, the DGX H100 system has additional requirements regarding power redundancy and resilience. The system includes six internal power supply units. Four power supply units must be energised for the server to operate.

A failure of a single system in a multi-node AI workload will cause the entire job to stop on all the systems. In environments where system availability is paramount, and work would not be recoverable (for example, from a checkpoint), a minimum of three power sources (rPDUs fed by discrete upstream power distribution paths) must be provisioned to each rack. Each of those sources will connect to two of the six system power supplies on each system, guaranteeing that a failure or maintenance event on any one of those sources will leave a minimum of four system power supplies energised.

Due to this requirement, the data centre must minimally provide N+1 power, where N equals two power sources. Each power source must be sized to support 50% of the total peak load. This requirement applies to DGX H100 systems racks only. Management racks may be powered with traditional 2N redundancy using two power feeds.

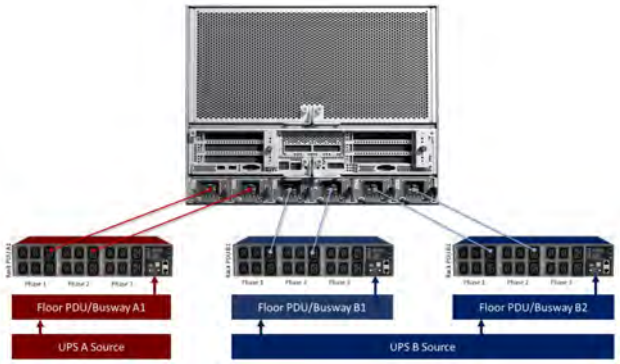
The following illustrations and tables describe three power provisioning design concepts.

Traditional redundant power provisioning pattern

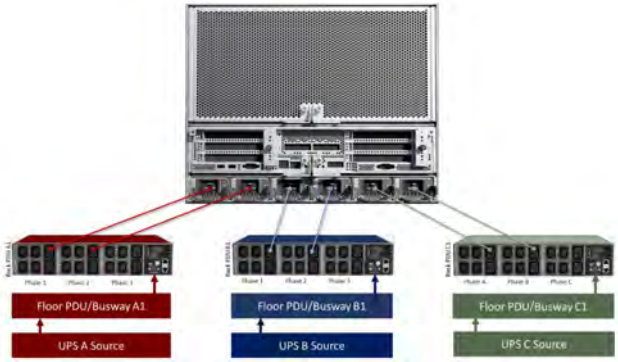


Not acceptable for DGX H100 systems

N+1 power provisioning pattern

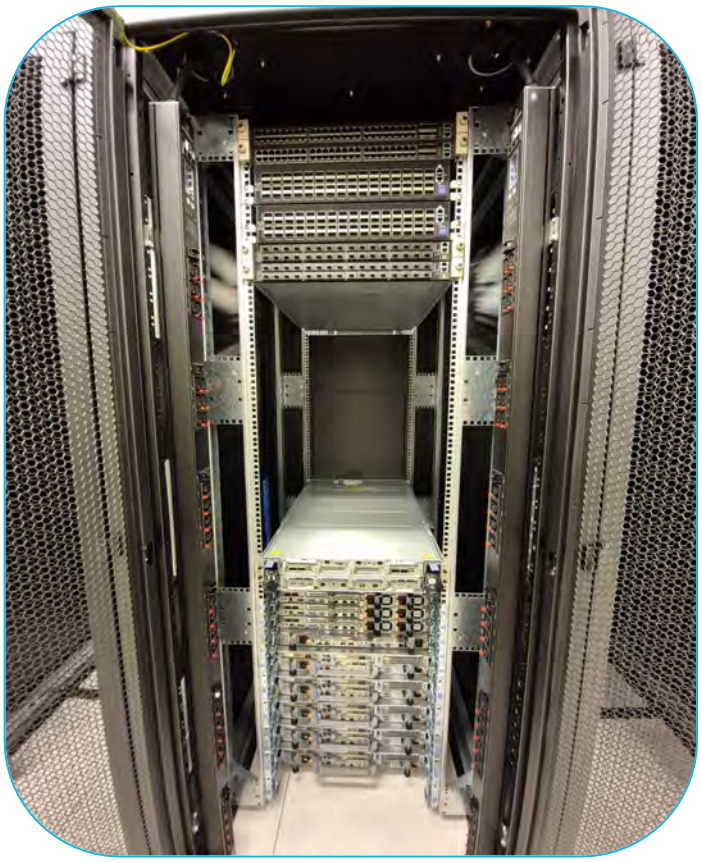


Enhanced N+1 power provisioning pattern



Rack Power Distribution Unit Selection

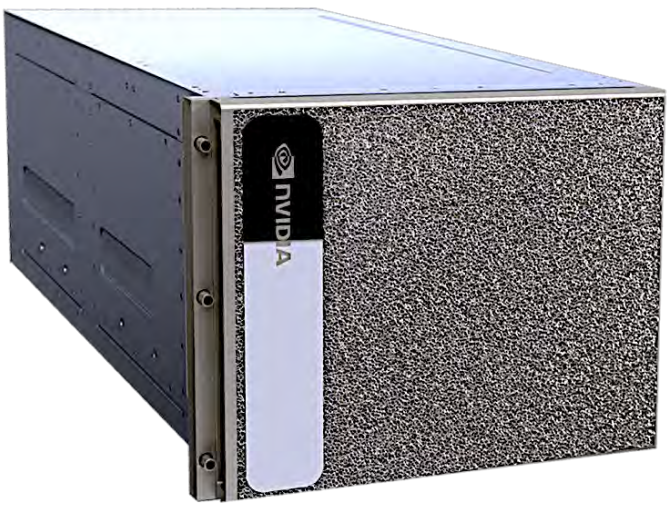
There are various options for providing redundant power. Each of the three required power input paths must support half of the expected peak power of the rack. However, it's important to note that for the typical N+1 provisioning pattern, two of the three power paths will eventually converge at some upstream junction (such as a Room PDU or UPS), so that junction point must still be sized to manage each downstream rack's full peak load.



rPDU features should include remote power monitoring Rest API capability for automation, and rack temperature/humidity monitoring.

Due to cable management and cabinet depth limitations, as well as the potential quantity of rPDUs to be deployed, horizontal rPDUs may be required. Vertical (0U) rPDUs are an option only in racks of sufficient width and depth where they would not obstruct access to any portion of the back of the system chassis, and they must be mounted at the rearmost mounting points at the back of the rack. A maximum of two vertical PDUs are possible; therefore, the remaining rPDU must be horizontal.

Schleifenbauer can provide rPDU recommendations based on the target data centre's power provisioning specifications. In this document, an example of horizontal PDUs 3 phase 32A is presented. Any other PDU configuration can be customized for you.

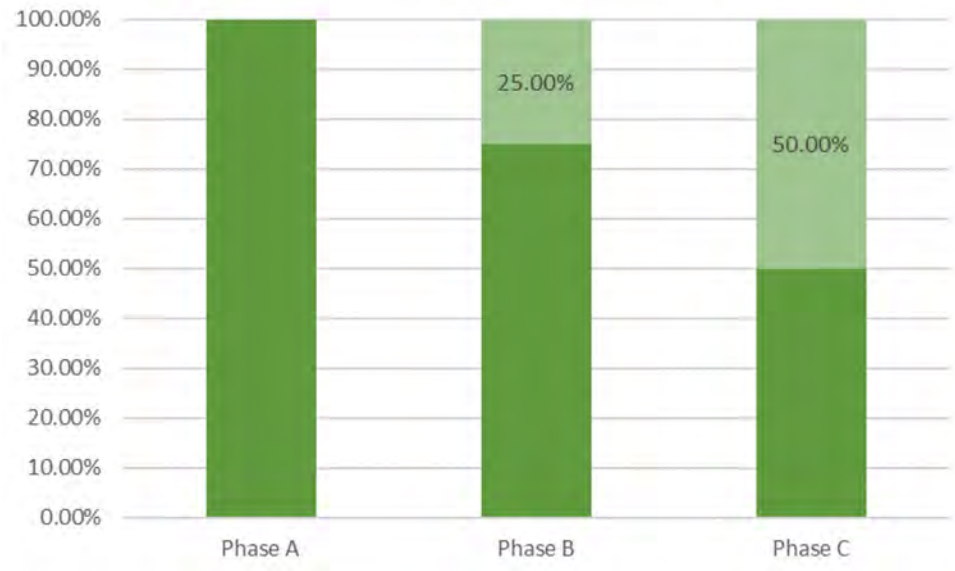


Phase Balancing

The power draw across the phases of a three-phase circuit should be as balanced as possible. In simple terms, a three-phase circuit is considered unbalanced when one of its phases draws more current than the average drawn by all three. This imbalance can lead to several negative implications, including potential thermal derating of the conductors, deviation of proper electrical phase angle, potential damage to upstream transformers, unexpected breaker trips during failover events, and notably, the underutilisation of power capacity in the other phases if one phase reaches 100% utilisation before the others. While achieving perfect balance across all three phases is typically not feasible, minimising the difference between phases is highly advantageous.

The diagram below illustrates Phase A reaching 100% utilisation, while Phases B and C still have 25% and 50% of their capacity available, respectively. This unused capacity is effectively wasted due to the unbalanced utilisation pattern.

Unbalanced phase utilization



For this reason, each PSU of each system should be connected to a different "leg" (or phase) on the rPDUs. The onboard metering function of the rPDU provides an indication of power draw per phase or circuit, aiding in the evaluation of phase balancing. In a system with potentially intricate power provisioning schemes, such as the DGX SuperPOD, phase balancing is particularly crucial.

Balancing the phases while maintaining the availability and performance characteristics of the N+1 design requires two racks of systems. Rack 1 is detailed in Figure 8 and Table 12, while rack 2 is described in Figure 9 and Table 13. The PSUs on the systems are grouped in pairs, with each pair drawing power from defined phases on specific rPDUs. It's worth noting that for each PDU sharing a common upstream UPS source, the feeder circuit is sourced from a different floor PDU or busway to maximise upstream diversity. For clarity of illustration, only two systems are depicted for each rack. However, the same approach is employed with higher rack densities.

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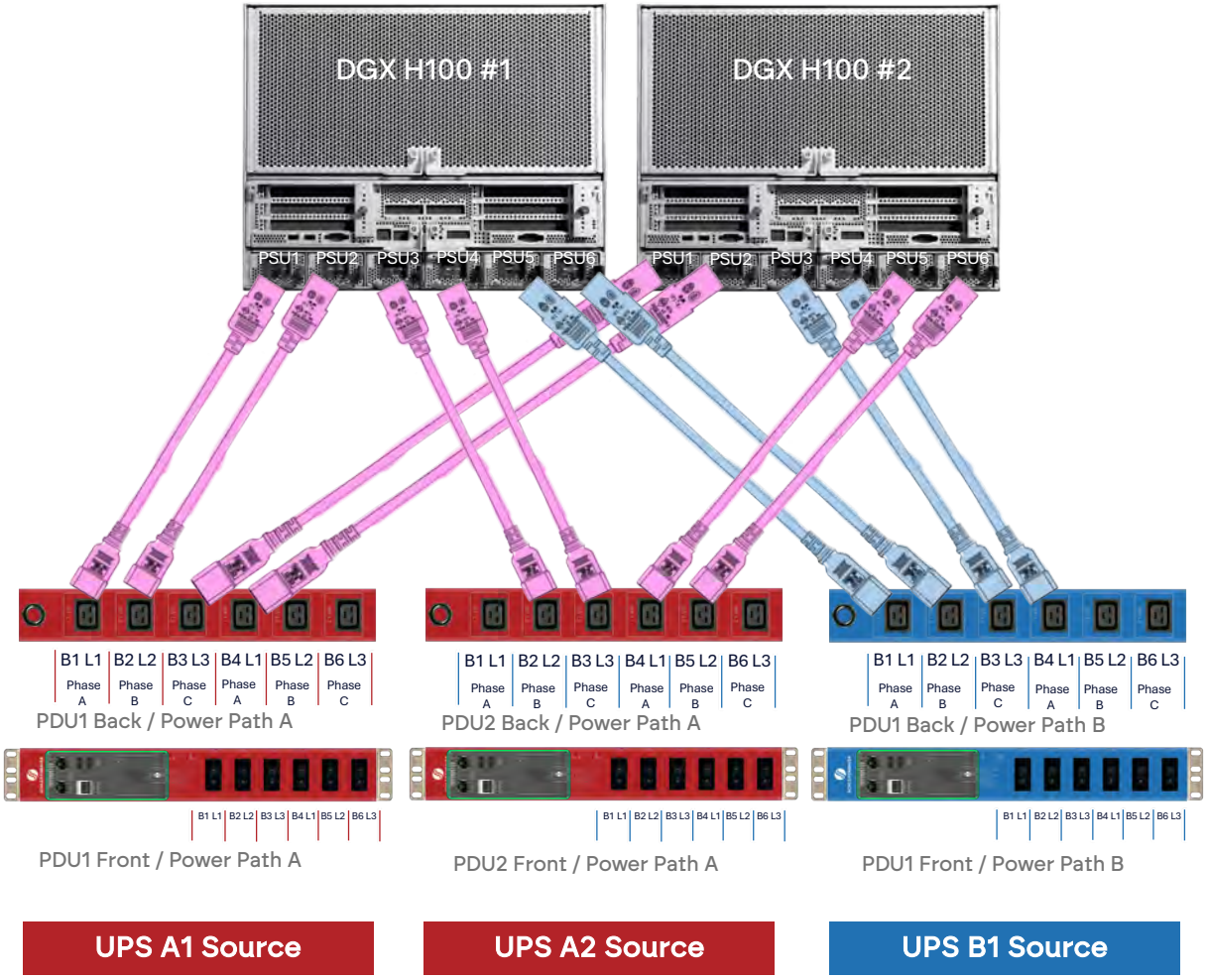
Data Centre A + B Feed Situation



3 Phase 32A PDU

Logical phase balancing table for N+1 power-rack 1

UPS/Gens	Floor PDU	Rack PDU	PSU Phase Assignments											
			DGX H100 #1						DGX H100 #2					
			PSU1	PSU2	PSU3	PSU4	PSU5	PSU6	PSU1	PSU2	PSU3	PSU4	PSU5	PSU6
Power Path A	PDU1	rPDU A1	A	B					C	A				
Power Path A	PDU2	rPDU A2			B	C							A	B
Power Path B	PDU1	rPDU B1					A	B			C	A		

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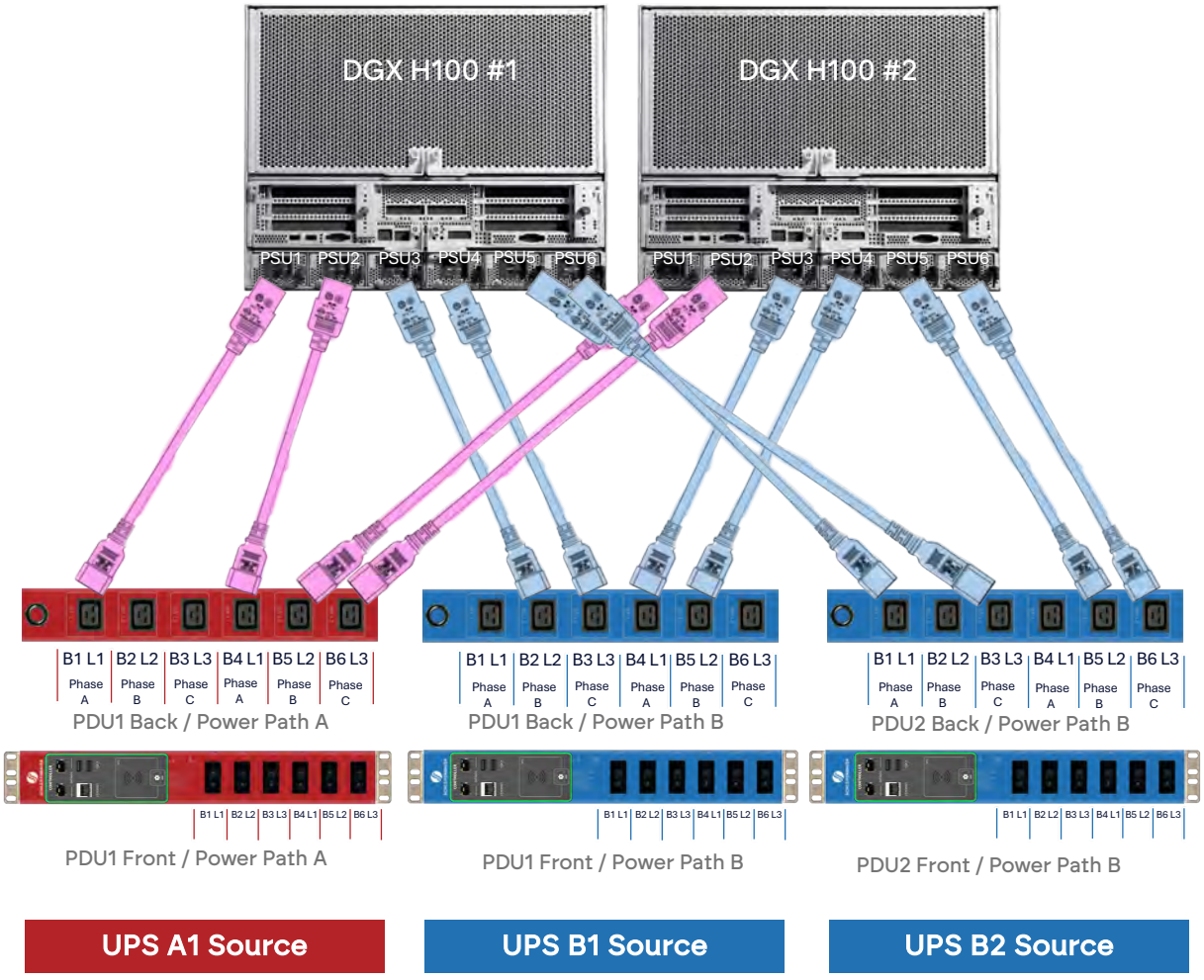
Data Centre A + B Feed Situation



3 Phase 32A PDU

Logical phase balancing table for N+1 power-rack 2

UPS/Gens	Floor PDU	Rack PDU	PSU Phase Assignments											
			DGX H100 #1						DGX H100 #2					
			PSU1	PSU2	PSU3	PSU4	PSU5	PSU6	PSU1	PSU2	PSU3	PSU4	PSU5	PSU6
Power Path A	PDU1	rPDU A1	C	A					B	C				
Power Path B	PDU1	rPDU B1			B	C					A	B		
Power Path B	PDU2	rPDU B2					C	A					B	C

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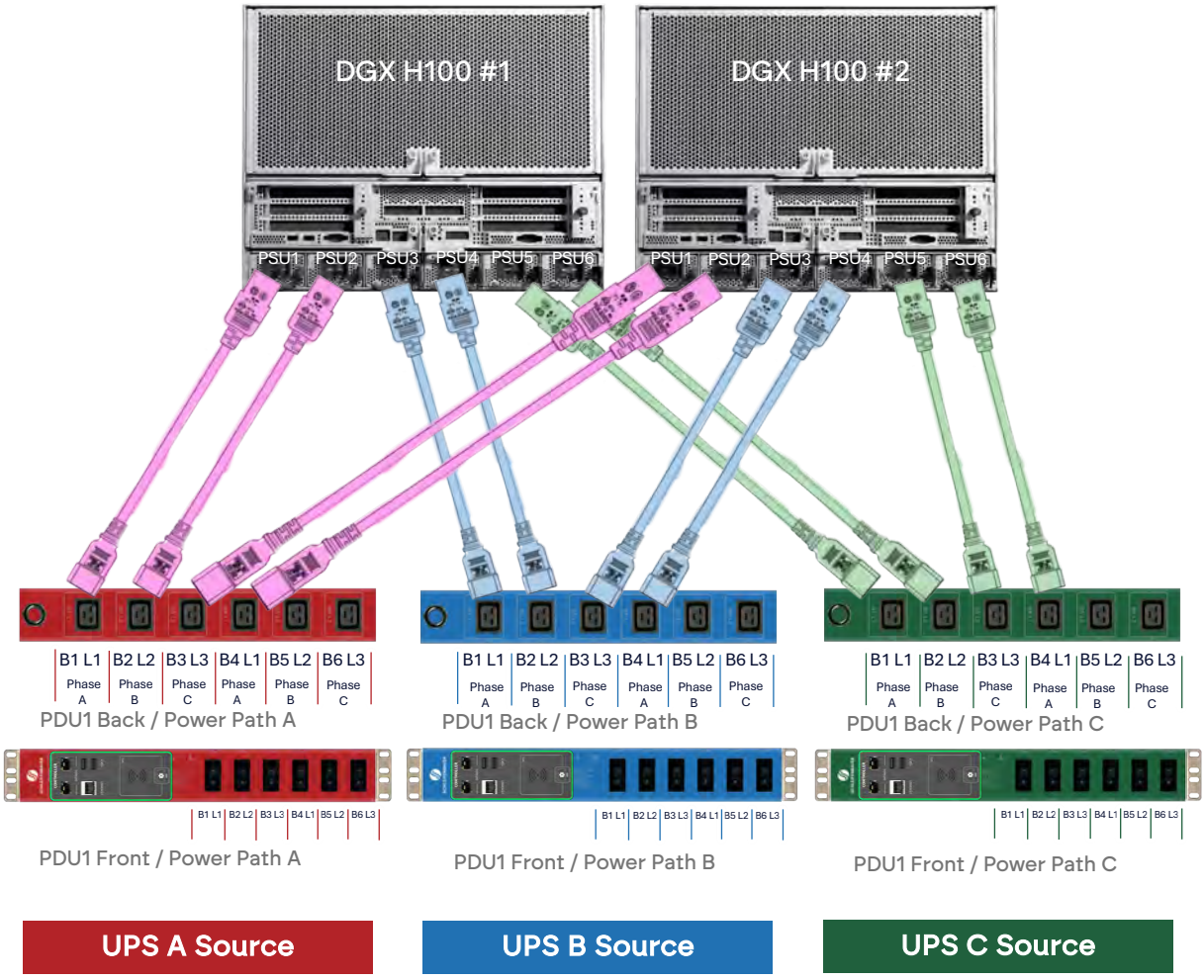
Data Centre A, B + C Feed Situation



3 Phase 32A PDU

Logical phase balancing table for Enhanced N+1 power-rack 1

UPS/Gens	Floor PDU	rPDU	PSU Phase Assignments											
			DGX H100 #1						DGX H100 #2					
			PSU1	PSU2	PSU3	PSU4	PSU5	PSU6	PSU1	PSU2	PSU3	PSU4	PSU5	PSU6
Power Path A	PDU1	rPDU A1	A	B					C	A				
Power Path A	PDU1	rPDU B1			A	B					C	A		
Power Path C	PDU1	rPDU C1					A	B					C	A

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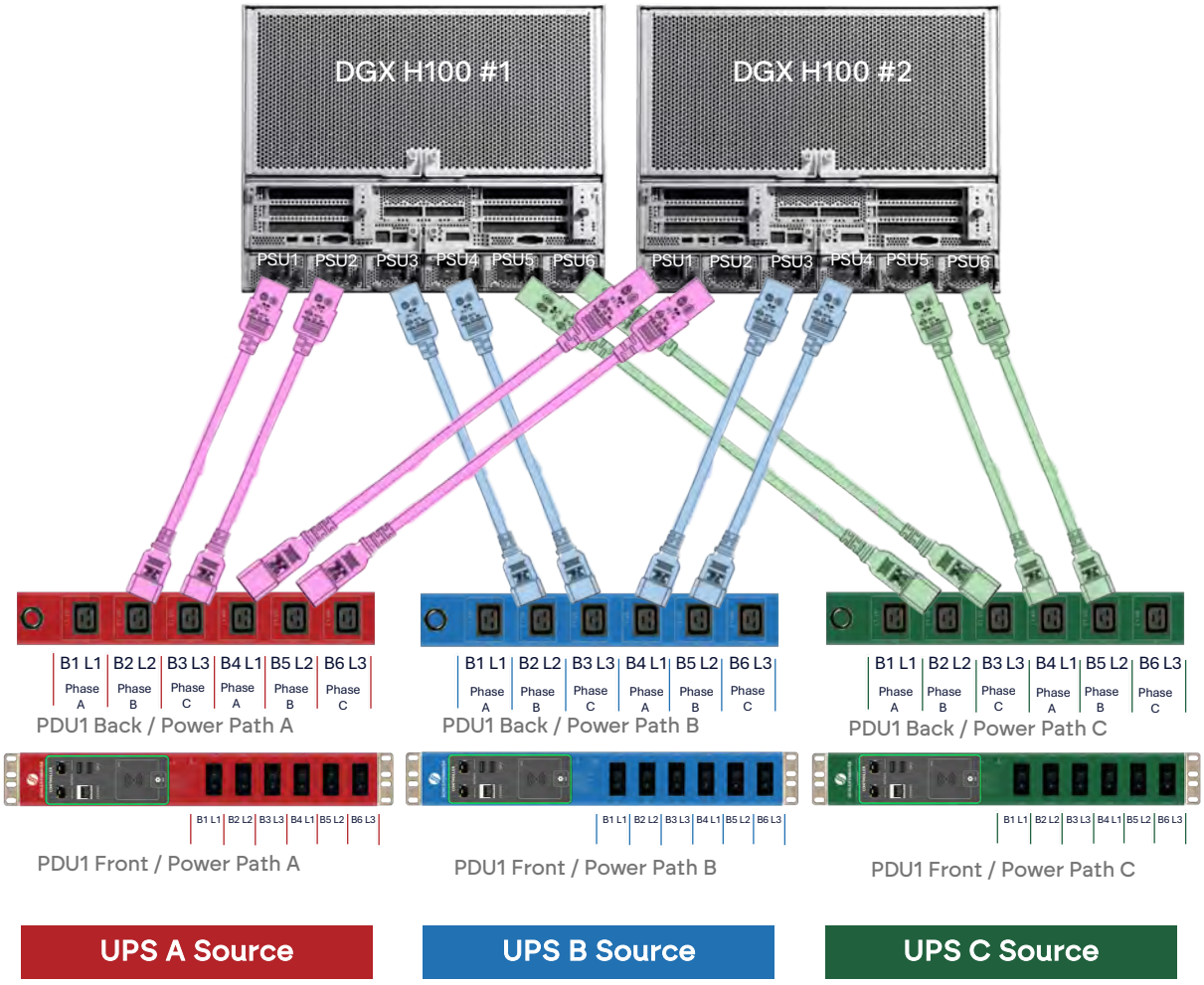
Data Centre A, B + C Feed Situation



3 Phase 32A PDU

Logical phase balancing table for Enhanced N+1 power-rack 2

UPS/Gens	Floor PDU	rPDU	PSU Phase Assignments											
			DGX H100 #1						DGX H100 #2					
			PSU1	PSU2	PSU3	PSU4	PSU5	PSU6	PSU1	PSU2	PSU3	PSU4	PSU5	PSU6
Power Path A	PDU1	rPDU A1	B	C					A	B				
Power Path B	PDU1	rPDU B1			B	C					A	B		
Power Path C	PDU1	rPDU C1					B	C					A	B

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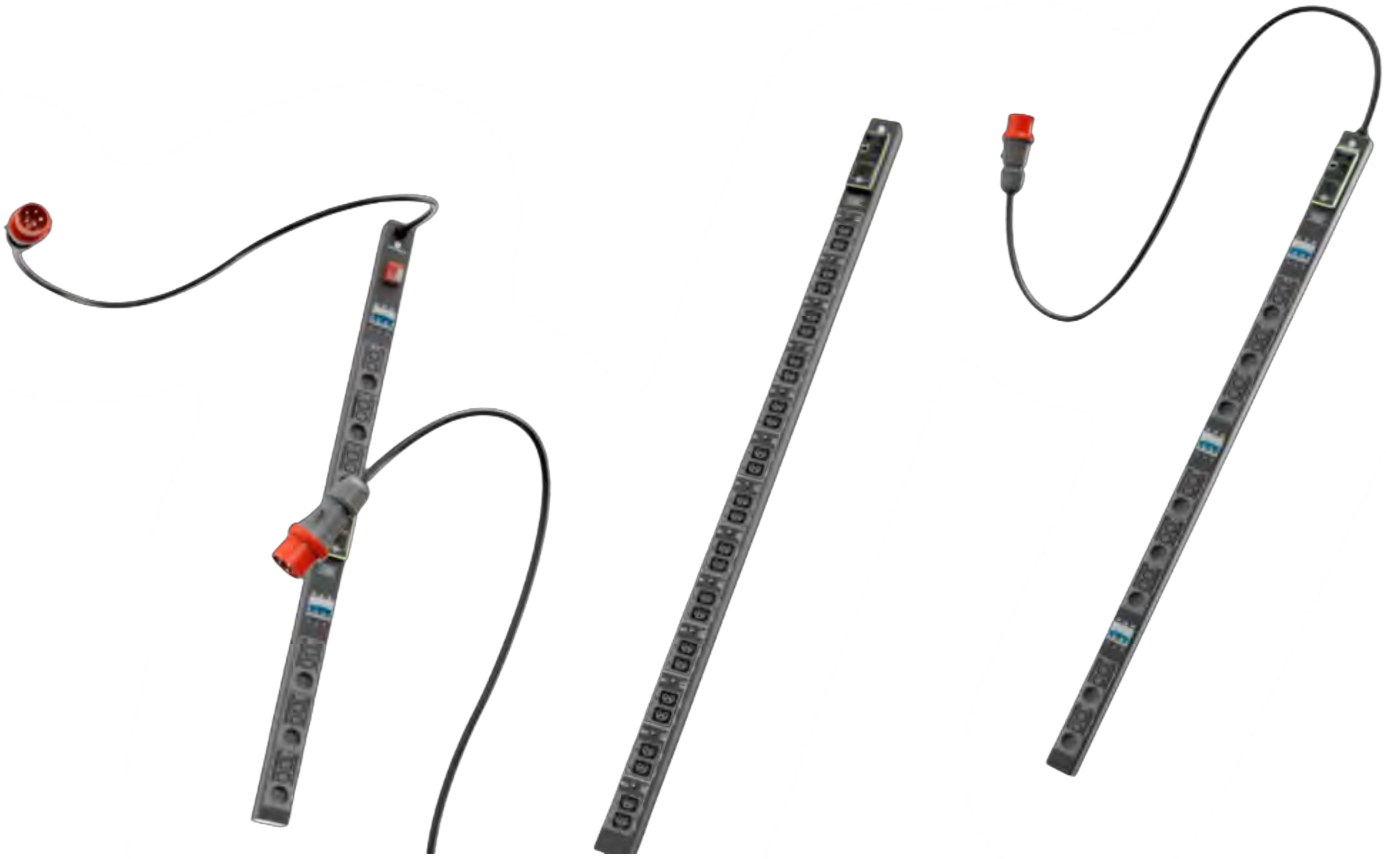
Get Your PDU Crafted by Experts

YourPDU®



Basic / Metered / Monitored / Switched / Managed
1 Phase / 3 Phase / 10A, 16A, 32A, 63A

- Configurable
- Quote Within 1 day
- Made in The Netherlands
- No MOQ
- Free customisation
- Delivery within 3 weeks

Horizontal 19” PDU

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Example PDU for NVIDIA DGX™ H100

METERED PDU

Summary:

- double horizontal PDU
- three phase 32 A
- metered input 6 outlets

SPECIFICATIONS

DIMENSIONS	L x W x D = 440 x 65 x 105 mm (1.5 U) (excl. strain relief, mounting & cable bending radius)
ENCLOSURE	Profile color red, aluminium with stainless steel covers (IP20)
MOUNT	sidecover 19 inch double deep housing
POWER INPUT	three phase 32 A, 230/400V - 50/60Hz
CABLE ENTRY	power entry rear-side left
CABLE & PLUG	Power lead (5G6 halogenfree) with CEE plug 3,0m (strain relief height 2,5cm)
CONNECTIVITY	databus: 2 x RJ45 | Ethernet: RJ45 | sensorport: RJ12 | USB
INPUT METERING	volt, ampere, kWh, power factor
FUSES	6 x Hydraulic-magnetic breaker 16A
DISPLAY	LCD display with backlight and configurable orientation
OUTLETS	6 x IEC 60320 C19

Item code 1714DIN3361

Item Code C5C4DIN3361

Item code 95ADDIN3361

Item code E094DIN3361

Any PDU configuration can be customized for you.

Vertical PDU

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Example PDU for NVIDIA DGX™ H100

Item code CA88WMS36C8

SWITCHED PDU

Summary:

- double vertical
- PDU three phase
- 63 A metered
- inputs
- metered branches
- (12x) switched outlets
  24 outlets

SPECIFICATIONS

DISPLAY	LCD display with backlight and configurable orientation
CONNECTIVITY	databus: 2 x RJ45 | Ethernet: RJ45 | sensorport: RJ12 | USB
ENCLOSURE	Profile color black, aluminium with stainless steel covers (IP20)
DIMENSIONS	L x W x D = 1580 x 65 x 105 mm (0U) (excl. strain relief, mounting & cable bending radius)
POWER INPUT	three phase 63 A, 230/400V - 50/60Hz
CABLE ENTRY	power entry side-cover top
CABLE & PLUG	Power lead (5G10 halogenfree) with CEE plug 2,0m
BRANCH METERING	12 x volt, ampere, kWh, power factor
OUTLETS	24 x IEC 60320 - C13/C15/C19/C21 (IEC Lock)
SWITCHED OUTLETS	24 times bistable near zero crossing switching relays
FUSES	12 x Hydraulic-magnetic breaker 16A
CONFIGURABLE	Each PDU is fully configurable to your exact specifications, at no additional cost. Options include outlet configuration, fuse type, cable inlet position, cable length, plug type, protective features, RCS integration and housing colour. Have specific requirements or a project to discuss? We are happy to support you. Contact us at sales@schleifenbauer.eu or share your specifications for a tailored solution.

Vertical PDU

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Example PDU for NVIDIA DGX™ H100

Item code E702WMS36C8

SWITCHED PDU 5.0
CONTROLLER MODULE

Summary:

- double vertical
- PDU three phase
- 63 A metered
- inputs
- metered branches
- (12x) switched outlets 24 outlets

SPECIFICATIONS

GENERAL	Remote display using smartphone NFC app, up to 100 PDUs share one IP address, ESD safe, toolless hot swappable communications module
CONNECTIVITY	Controller Module: dual 1Gbps Ethernet(RJ45/USB), RJ45 daisy chain, USB expansion/sensor • HTTPS, SNMP V2c, V3, LDAP, AD, REST API, SSH, SMTP, SYSLOG
ENCLOSURE	Profile color black, aluminium with stainless steel covers (IP20)
DIMENSIONS	L x W x D = 1590 x 65 x 105 mm (0U) (excl. strain relief, mounting & cable bending radius)
POWER INPUT	three phase 63 A, 230/400V - 50/60Hz
CABLE ENTRY	power entry side-cover top
CABLE & PLUG	Power lead (5G10 halogenfree) with CEE plug 2,0m
BRANCH METERING	12 times voltage (V), current (A), active power (W), apparent power (VA), reactive power (VAR), energy (kWh), apparent energy (VAh), frequency (Hz), power factor, crest factor, total harmonic distortion (%)
OUTLETS	24 x IEC 60320 - C13/C15/C19/C21 (IEC Lock)
SWITCHED OUTLETS	24 times bistable near zero crossing switching relays
FUSES	12 x Hydraulic-magnetic breaker 16A
CONFIGURABLE	Each PDU is fully configurable to your exact specifications, at no additional cost. Options include outlet configuration, fuse type, cable inlet position, cable length, plug type, protective features, RCS integration and housing colour. Have specific requirements or a project to discuss? We are happy to support you. Contact us at sales@schleifenbauer.eu or share your specifications for a tailored solution.

PDU 5.0

YourPDU

Fully Configurable PDUs – At No Extra Cost or Delay

Every Schleifenbauer PDU is assembled to order and fully tailored to your specifications. You define exactly what you need—at no additional cost, with no minimum order quantity, and without affecting lead times.

Whether you require:
- Specific cable lengths or connector types
- Custom outlet layouts (type, number, position, and colour)
- Integrated measurement and monitoring features
- Controller positioning or control interface adjustments
- Unique identification (labelling, barcodes, colour coding)
- Mechanical adaptations for specific rack or mounting situations

We ensure your PDU fits seamlessly into your infrastructure and operational workflow. Our efficient production process guarantees fast delivery regardless of the configuration.

With Schleifenbauer, there is no need to compromise on design or planning. You get precisely what your project requires—quickly, reliably, and without hidden costs.

Find all the detailed customisation options on our website www.Schleifenbauer.eu

Measurement
Per Phase
Per Breaker
Per Outlet

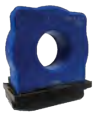
Remote Switching
Outlet switching delay
Near Zero Voltage Switching
Bi-stable relays

Modules
Gateway Module
Controller module
Daisy chain Module

Protection
Dehn Surge protection
External Earthing

Chassis colours
Red
Blue
Green
Yello
Orange
Gray

Cable & Plug
Input position
Cable length
Plug type



Sensor
RCS Residual
current senso

Specials
LED per outlet
Frequency filter
On-off toggle switch

Engraving
Company Logo
Your item code
A or B Feed mark

Mounting
Type of brackets
Custom made brackets

Circuit Breaker
Hydraulic Magnetic
MCB
Thermal fuse
Melt fuse

Outlets
Type & Amount
Alternating phase outlets

SENSORS

Temperature Sensor
- 2x RJ45 connector
- 1x USB-C (with single screw lock)
- Dual color status Led

Temperature & Humidity Sensor
- 2x RJ45 connector
- 1x USB-C (with single screw lock)
- Dual color status Led

Digital input (2 x) sensor
- 2x RJ45 connector
- 1x USB-C (with single screw lock)
- 2x digital input (connector 4 pins)
- Non-isolating (contact closure), Ground switching (Internal Pull-Up)
- Dual color status Led

Digital input (4x) output (2x) sensor
- 2x RJ45 connector
- 1x USB-C (with single screw lock)
- 4x digital input (connector 8 pins)
- Non-isolating (contact closure), Ground switching (Internal Pull-Up)
- 2x relay 12V Power In, 2 dry contacts outputs
- Dual color status Led

150770
Digital input (2x) sensor

150750
Temperature sensor

Each PDU supports up to 16 Daisy Chained sensors per USB port

The order of connected sensors is flexible, and use of both USB ports is optional

150780
Digital input (4x) output (2x) sensor

150760
Temp / Humidity sensor

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PDU 5.0 Video — SCAN ME

EnerTree Platform Software — SCAN ME

PDU Display App — SCAN ME

PDU 5.0 User Manual 1.07 — SCAN ME

EnerTree User Manual 1.12 — SCAN ME

Catalogue PDU 5.0 — SCAN ME

Catalogue Brackets — SCAN ME

Trust your power distribution needs to the experts
Crafted and perfected in The Netherlands