

MODULAR AI INFRASTRUCTURE BUILT TO SCALE. FASTER.

Solutions Overview and Technical Specifications

Turnkey modular AI infrastructure, engineered and factory-built for inference, high-density AI training clusters, and hyperscale campus deployments.

TURNKEY MODULAR AI Infrastructure

Compu Dynamics Modular (CDM) delivers turnkey modular infrastructure for AI data centers, built around application workloads. From standalone high-density IT modules to campus-scale AI factory deployments, CDM brings design, engineering, manufacturing, integration, and lifecycle support together under one roof.

Designed and built in the USA for AI training, inference, and HPC workloads, our platforms deliver a flexible, factory-built, and field-assembled architecture for faster, more predictable capacity.

Key Platform Features

AI-Optimized: Purpose-built for inference, HPC, and advanced GPU workloads.

Fully Integrated: Unifies high-density IT white space with right-sized power and cooling into a single deployable asset.

Scalable Capacity: Repeatable 5MW to 6MW blocks scaling to 50MW+ campuses, or adaptable 1.5MW to 3MW configurations.

Open OEM Integration: Vendor-neutral architecture supporting leading chip, IT, power, and infrastructure OEMs.

80/20 Standardized Core: Standardized for speed to market, yet flexible where customers need critical architectural control.

Flexible Engagement Models

Turnkey AI Factory:

End-to-end delivery of the entire data hall, power, cooling, and site prep from concept to Level 5 commissioning.

Powered Shell Integration:

Seamlessly drop high-density IT and resilient power modules directly into existing site or base building structures.

Build-to-Print Manufacturing:

Leverage our expansive factory capacity for high-volume, discrete module production based on established designs.

CDM At a Glance:

20+ Years

of mission-critical data center, modular infrastructure, and manufacturing expertise.

US-Based

manufacturing from design and prefabrication through assembly, integration, testing, and deployment readiness.

Application-Optimized

modular infrastructure engineered around the IT workload, with right-sized power, cooling, redundancy, and supporting systems.

Lifecycle Support

from concept and engineering through deployment, operations, upgrades, and future expansion.



Engineered for Application Workloads

All CDM modules share a foundational engineering DNA explicitly designed to support the intense thermal and high-density power requirements of next-generation AI hardware.

Resilient Power Architecture

- **N+1 to 4-to-Make-3 Topologies:** Highly resilient electrical architectures scaling seamlessly from standalone base modules to concurrently maintainable multi-megawatt campuses.
- **Dynamic Load Stabilization:** Optimized battery configurations with standard 5-minute EOL runtimes to stabilize extreme AI power fluctuations and GPU step-loads.
- **Future-Ready Backbones:** Electrical infrastructure is engineered to be fully adaptable for future Solid State Transformers (SST) and Battery Energy Storage System (BESS) integration.

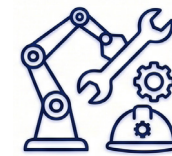
Hybrid Cooling Architecture

- **Optimized Liquid/Air Cooling Ratio:** Optimized baseline for advanced GPUs (e.g., NVIDIA NVL72). Dedicated secondary loops (TCS) deliver direct-to-chip (DTC) liquid cooling via in-rack or in-row CDUs.
- **UPS-Backed:** Redundant UPS power is specifically allocated to critical cooling fans, pumps, and facility controls to ensure stability during utility power transfers.
- **Concurrent Maintainability:** Configured with separate isolation valves on each cooling water entry, allowing operators to perform concurrent routine maintenance without dropping critical IT workloads.

The CDM Lifecycle Approach



1. **Plan & Design:** High-density capacity planning and modularization strategy.



2. **Engineer & Build:** U.S. factory fabrication, full integration, and rigorous testing to UL 2755 and ISO 9001 standards.



3. **Deploy & Commission:** Heavy rigging, mechanical/electrical integration, and Level 5 Commissioning.



4. **Operate & Evolve:** Lifecycle support, maintenance, and hardware adaptability.

Technical Specifications: 750kW All-In-One Module



A highly compact, fully self-contained modular AI solution housing IT, power, and cooling within a single deployable footprint. Ideal for localized inference workloads or constrained site deployments.

Ideal Deployment Use Cases

- **AI Edge Inference:** Perfect for deploying low-latency, real-time data processing closer to the point of data generation (e.g., autonomous systems, real-time analytics).
- **Constrained Site Deployments:** A fully self-contained footprint ideal for existing commercial real estate, manufacturing facilities, or telecommunications hubs lacking traditional data center white space.
- **Sovereign Edge Computing:** Localized, private infrastructure for latency-sensitive applications requiring strict data sovereignty and security.

CATEGORY	SPECIFICATION	PARAMETER
CAPACITY	Nominal IT Load	Up to 750kW
	Number of Server Racks	8 to 16
	Rack Type	All current IT racks and vendors
# of Modules	IT and Power Modules	One integrated module
DIMENSIONS	Length x Width	43' - 55' (L) x 11.5' (W)
	Height (w/o cooling module)	12.25' (H)
	Max Module Weight	~50,000 – 55,000 lbs (without IT)
POWER	Power Architecture	Integrated UPS and switchgear sized to the IT and cooling load.
	Power Distribution	Busbar or cable distribution
	Input Power Voltage	480V and 415V supported
COOLING	Cooling Technology	Hybrid (Air + Liquid to Rack) or DX air for rack densities 50kW or below

Technical Specifications:

1.5MW Base Module



The foundational building block of the CDM AI platform. It intelligently integrates the high-density IT white space, a dedicated 2MW critical power module, and hybrid cooling systems into a single functional asset.

Ideal Deployment Use Cases

- **Enterprise AI Adoption:** The optimal starter block for enterprises deploying private AI infrastructure for model fine-tuning or heavy inference without overcommitting capital.
- **Colocation Expansion:** Allows regional data center operators to instantly add high-density, liquid-cooled AI capacity without the need to retrofit their legacy air-cooled halls.
- **Phased Campus Growth:** Serves as the foundational “land-and-expand” block, allowing operators to scale power and IT perfectly in sync as compute demands grow.

CATEGORY	SPECIFICATION	PARAMETER
CAPACITY	Nominal IT Load	1.25MW – 1.7MW
	Number of Server Racks	Up to 20
	Rack Type	All current IT racks and vendors
# of Modules	IT and Power Modules	1 IT module + 1 power module
DIMENSIONS	Length x Width (total)	55.0’ (L) x 23’ (W)
	Height (w/o cooling module)	12.25’ (H)
WEIGHT	Max IT Module Weight	~50,000 – 55,000 lbs (without IT)
	Max Power Module Weight	~50,000 – 55,000 lbs
POWER	Power Architecture	1x Dedicated 2MW Power Module (N+1)
	Input Power Voltage	480V
	Voltage to Rack	480V/277V or 415V
COOLING	Cooling Technology	Hybrid (Chilled Water AHU + Liquid)

Technical Specifications:

3MW AI Modular Solution



Constructed by physically connecting two 1.5MW base modules to create a contiguous data hall, supported by two dedicated 2MW Power Modules. Engineered for mid-scale AI training and heavy inference.

Ideal Deployment Use Cases

- **Mid-Scale LLM Training:** Engineered with contiguous space for specialized research computing, university HPC clusters, and mid-tier foundation model training.
- **Dedicated Private GPU Clouds:** Provides the right balance of scale and physical isolation for sovereign AI, financial services, or healthcare organizations processing massive, sensitive datasets.
- **Heavy Inference Hubs:** Ideal for regional hubs serving high volumes of generative AI queries, ensuring high availability with dual dedicated 2MW power modules.

CATEGORY	SPECIFICATION	PARAMETER
CAPACITY	Nominal IT Load	2.5MW – 3.5MW
	Number of Server Racks	Up to 40
	Rack Type	All current IT racks and vendors
# of Modules	IT and Power Modules	2 IT modules + 2 power modules
DIMENSIONS	Length x Width (total)	55' (L) x 46' (W)
	Height (w/o cooling module)	12.25' (H)
WEIGHT	Max IT Module Weight	~100,000 – 110,000 lbs (without IT)
	Max Power Module Weight	~100,000 – 110,000 lbs
POWER	Power Architecture	2x Dedicated 2MW Power Modules
	Input Power Voltage	480V
	Voltage to Rack	480V/277V or 415V
COOLING	Cooling Technology	Hybrid (Chilled Water AHU + Liquid)

Technical Specifications:

5MW Turnkey AI Factory



The pinnacle of modular hyperscale deployment. Four 1.5MW IT modules physically connect to form a seamless ~2,530 sq. ft. data hall, powered by a hyper-resilient 4-to-make-3 electrical architecture providing 8MW of installed UPS capacity.

Ideal Deployment Use Cases

- **Hyperscale Campuses:** The standardized building block for rapidly replicating footprints into 10MW, 15MW, or 50MW+ AI data centers.
- **Foundation Model Training:** Ensures uninterrupted uptime and massive contiguous space for large-scale LLM training epochs.
- **Wholesale AI Colocation:** Delivers extreme-density, multi-tenant environments at a fraction of traditional construction timelines.

CATEGORY	SPECIFICATION	PARAMETER
CAPACITY	Nominal IT Load	5MW scalable up to 6MW
	Number of Server Racks	Up to 64
	Rack Type	All current IT racks and vendors
# of Modules	IT and Power Modules	4 IT modules + 4 power modules
DIMENSIONS	Length x Width	IT modules: 55' (L) x 46' (W) Power modules: 55' (L) x 46' (W)
	Height (w/o cooling module)	12.25' (H)
WEIGHT	Max IT Module Weight	~240,000 lbs (without IT)
	Max Power Module Weight	~240,000 lbs
POWER	Power Architecture	4x 2MW Power Modules (4-to-make-3)
	Input Power Voltage	480V
	Voltage to Rack	480V/277V or 415V
COOLING	Cooling Technology	Hybrid (Chilled Water AHU + Liquid)

Facility Controls & Environmental Resilience

Regardless of footprint or capacity, every CDM deployment is unified by a standardized approach to safety, monitoring, and structural integrity. The following facility controls and environmental resilience features are engineered into the DNA of the entire CDM AI Platform, ensuring mission-critical reliability from single edge modules to campus-scale data halls.

Environmental Control System (ECS)

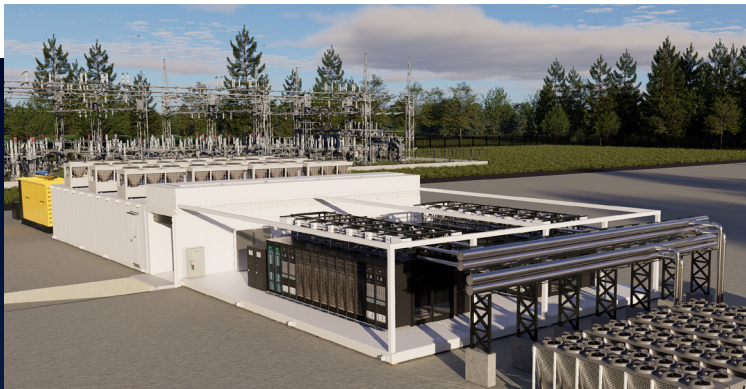
- **Centralized Management:** Complete monitoring and control of the CDM modular solution.
- **Integrated Telemetry:** Consolidates control and monitoring of power, cooling, setpoints, alerts, and alarms.
- **BMS Integration:** Fully customizable to sync with standard existing building management systems via BACnet/Modbus-TCP.
- **EPO Capabilities:** Built-in Emergency Power Off (EPO) system enabling immediate module shutdown.

Fire & Leak Protection

- **Smoke Detection & Alarms:** VESDA integrated throughout the modules, with dry connections to existing site fire systems for external routing.
- **Fire Suppression:** Engineered for NOVEC 1230 clean agent or standard pre-action sprinkler hookups per local AHJ requirements.
- **Leak Detection:** Dual-zone leak detection tape and point sensors specifically monitoring CDU boundaries, integrated directly into the ECS.
- **Fluid Drainage:** Internal pipework safely routes condensate water and CDU maintenance fluids to the exterior of the module.

Structural & Environmental Resilience

- **Rigging & Logistics:** Engineered with an 8-point bottom straight lift rigging design for secure heavy-haul and crane placement.
- **Ingress Protection:** NEMA 3R-rated exterior-ready construction with NEMA 4 pull boxes and demarc points.
- **Thermal Envelope:** R-18 insulated walls for superior thermal efficiency in extreme climates.
- **Environmental Ratings:** Engineered for Seismic Design Categories C or D, wind speeds of 130mph+, and snow loads of 50psf+.
- **Compliance & Manufacturing:** UL 2755-compliant modular data center design, manufactured and assembled in accordance with ISO 9001 standards.



Built for Scale. Engineered for Performance.

Adaptable for evolving AI workloads and campus environments, CDM's Turnkey Modular AI Factory delivers resilient, right-sized capacity with flexible power and cooling options. Its repeatable block design supports efficient deployment, scalability, and reliability for high-density AI training, inference, and high-performance computing.

Let's drive modular AI innovation and efficiency – together.



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