

TECHNICAL DATASHEET

SUPERMICRO · GPU & AI SERVERS

Supermicro 1U GPU Server SYS-120GQ-TNRT

DP Intel System with 4 GPUs

SKU SYS-120GQ-TNRT

1U

LGA4189

Supermicro



FORM FACTOR

1U

MAX POWER (BASE)

522 W

HEAT OUTPUT

1,781 BTU/h

PRICE

On request

REQUEST A QUOTATION ONLINE

serverinvest.com/product/sys-120gq-tnrt

01 Product overview

The Supermicro SYS-120GQ-TNRT is a 1U GPU Server built on dual Intel Xeon Scalable 3rd Gen processors with up to 4 TB of memory in 16 DIMM slots.

DP Intel System with 4 GPUs.

The chassis accepts up to 4 GPU accelerators for AI, rendering and HPC workloads.

ServerInvest configures every SYS-120GQ-TNRT to order, updates BIOS and BMC firmware, installs your operating system on request and runs a 48-hour burn-in test before delivery. Every system includes a 3-year warranty.

HIGHLIGHTS

- Dual Intel Xeon Scalable 3rd Gen
- Up to 4 TB memory · 16 DIMM slots
- Total 4 bays 2 front hot-swap 2.5" NVMe drive bays
- Up to 4 GPUs
- Power: 1x 2000W
- Networking: 2 RJ45 10GbE

KEY SPECIFICATIONS

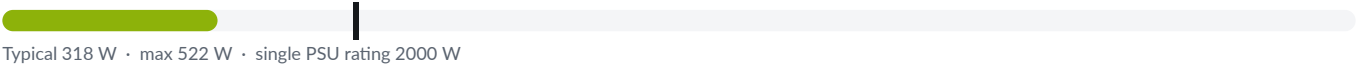
Form factor	1U
Processor	2× Intel Xeon Scalable 3rd Gen
Socket	LGA4189
Memory	16 DIMM slots, up to 4 TB
Drive bays	6 (6 NVMe)
GPU	Up to 4 GPUs
Power supply	1× 2000 W
Typical power draw	2550 W
Networking	2 RJ45 10GbE
Dimensions (W×H×D)	437 × 44 mm



02 Power & thermal

Calculated for the base configuration

IDLE	TYPICAL	MAXIMUM	HEAT (MAX)	COOLING	PSU LOAD
106 W	318 W	522 W	1,781 BTU/h	0.5 kW	26%



Typical 318 W · max 522 W · single PSU rating 2000 W

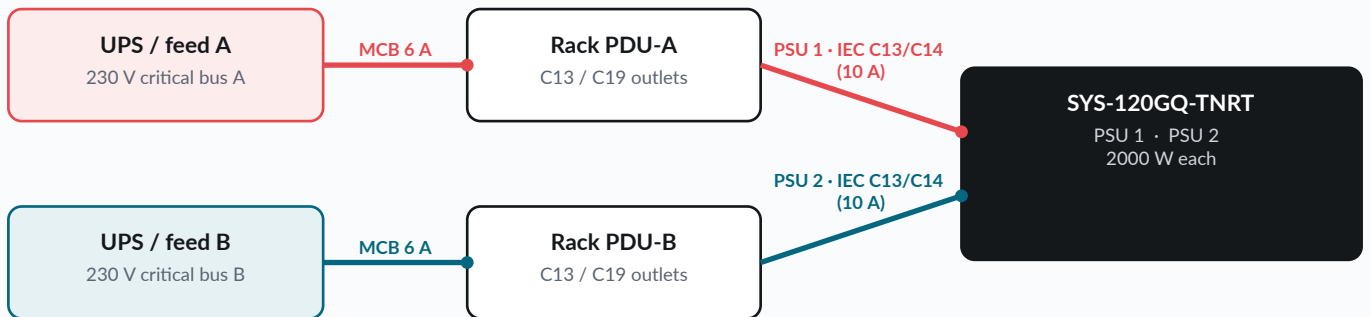
Annual IT energy (24/7)	2,229 kWh
Annual facility energy (PUE 1.5)	3,344 kWh
Annual energy cost	€446 IT · €669 incl. cooling (at 0.20 €/kWh)
CO ₂ emissions / year	0.87 t (grid factor 0.26 kg/kWh)
Power supplies	1× 2000 W

POWER BY COMPONENT	IDLE	TYPICAL	MAX
Chassis, motherboard, fans, BMC	38 W	59 W	85 W
2× CPU (base configuration)	50 W	220 W	370 W
4× Memory (base configuration)	12 W	20 W	36 W

DC loads converted to wall power at 94% PSU efficiency; typical load assumed 70% of the time. Engineering estimates — confirm with the manufacturer's power calculator for critical designs.

03 Power connection diagram

Dual-feed (A/B) connection for redundant power supplies



- Connect PSU 1 to PDU-A and PSU 2 to PDU-B (independent feeds) using IEC C13/C14 (10 A) power cords.
- Maximum current per feed: 2.4 A at 230 V — each feed must be able to carry the full load if the other fails.
- Recommended protection per PDU circuit: MCB 6 A, curve C; RCD according to local regulations.
- Heat to remove at full load: 522 W = 1,781 BTU/h (0.5 kW).

04 Full specifications

MOTHERBOARD

Super X12DGQ-R

PROCESSOR

CPU	Dual Socket P+ (LGA-4189) 3rd Gen Intel Xeon Scalable processors
Core Count	Up to 40C/80T; Up to 60MB Cache per CPU
Note	Supports up to 235W TDP CPUs (Air Cooled)

GPU

Max GPU Count	Up to 4 double-width or 4 single-width GPUs
Supported GPU	NVIDIA PCIe: A100, A16, A2, A30, A40, RTX A5000, RTX A6000, T4 View GPU Options
CPU-GPU Interconnect	PCIe 4.0 x16 CPU-to-GPU Interconnect
GPU-GPU Interconnect	PCIe

SYSTEM MEMORY

Memory	Slot Count: 16 DIMM slots Max Memory (2DPC): Up to 4TB 3200MT/s ECC DDR4 RDIMM/LRDIMM Supports Intel Optane persistent memory 200 series View Memory Options
Memory Voltage	1.2V

ON-BOARD DEVICES

SATA	SATA (6Gbps) ; RAID 0/1/5/10 support
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Network Connectivity	2 RJ45 10GbE View AOC Options
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BMC	ASPEED AST2600 BMC
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INPUT / OUTPUT

Video	1 VGA port
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SYSTEM BIOS

BIOS Type	AMI 32MB SPI Flash EEPROM
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MANAGEMENT

Software	SuperCloud Composer (SCC) Supermicro Server Manager (SSM) Supermicro Update Manager (SUM) Supermicro SuperDoctor 5 (SD5) Super Diagnostics Offline (SDO) Supermicro Thin-Agent Service (TAS) SuperServer Automation Assistant (SAA) New!
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Power configurations	Power-on mode for AC power recovery ACPI Power Management
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SECURITY

Hardware	Trusted Platform Module (TPM) 2.0 Silicon Root of Trust (RoT) – NIST 800-193 Compliant
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Features	Cryptographically Signed Firmware Secure Boot Secure Firmware Updates Automatic Firmware Recovery System Lockdown
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PC HEALTH MONITORING

CPU	7 +1 Phase-switching voltage regulator Monitors for CPU Cores, Chipset Voltages, Memory
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Fan	Fans with tachometer monitoring Pulse Width Modulated (PWM) fan connectors Status monitor for speed control
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Temperature	Monitoring for CPU and chassis environment Thermal Control for fan connectors
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CERTIFICATIONS

Operating Systems	ESXi 7.0 U2 View all OS Compatibility and Certification Matrix
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CHASSIS

Form Factor	1U Rackmount
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Model	CSE-118GQE2TS-R2K05P
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DIMENSIONS AND WEIGHT

Height	1.7" (43 mm)
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Width	17.2" (437 mm)
Depth	35.2" (894 mm)
Package	8" (H) x 24" (W) x 46" (D)
Weight	Gross Weight: 58 lbs (26.31 kg) Net Weight: 45 lbs (20.4 kg)
Available Color	Black Front & Silver Body

FRONT PANEL

Buttons	2 USB 3.0 Power On/Off button System Reset button
LED	Fan fail LED Hard drive activity LED Network activity LEDs Power status LED UID LED

EXPANSION SLOTS

PCI-Express (PCIe) Configuration	Default 4 PCIe 4.0 x16 FHFL slots 2 PCIe 4.0 x16 LP slots View AOC Options
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DRIVE BAYS / STORAGE

Drive Bays Configuration	Default: Total 4 bays 2 front hot-swap 2.5" NVMe drive bays 2 internal fixed 3.5" SATA drive bays View NVMe Options View Drive Options
M.2	1 M.2 NVMe/SATA slot (M-key) View M.2 Options

SYSTEM COOLING

Fans	Up to 9 heavy duty fans with optimal fan speed control
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POWER SUPPLY

	1x 2000W 1x 2000W Redundant Titanium Level (96%) power supply Dimension (WxHxL) 73.5 x 40 x 265 mm
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OPERATING ENVIRONMENT

Environmental Spec.	Operating Temperature: 10°C to 35°C (50°F to 95°F) Non-operating Temperature: -40°C to 60°C (-40°F to 140°F) Operating Relative Humidity: 8% to 90% (non-condensing) Non-operating Relative Humidity: 5% to 95% (non-condensing)
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05 Built, tested & supported by ServerInvest

Engineered configuration

Every option validated for socket, memory channels, PCIe lanes, power and cooling.

48-hour burn-in

Assembled, firmware-updated and stress-tested before it leaves our workshop.

3-year warranty

Standard on every system, with on-site next-business-day upgrades available.

Rack-ready delivery

Rails, cable management and labelling included — delivered across Europe.



Interested in this solution?

Request a quotation online or talk to a solutions engineer — we reply within one business day.
office@serverinvest.com

Official manufacturer datasheet: serverinvest.com/product/sys-120gq-tnrt/datasheet/manufacture

