

TECHNICAL DATASHEET

SUPERMICRO · RACKMOUNT SERVERS

Supermicro 2U UP Server SYS-520P-WTR

2U WIO with 8 hot-swap 3.5" SAS/SATA bays and up to 5 PCIe 4.0 slots

SKU SYS-520P-WTR

2U

Supermicro



FORM FACTOR

2U

MAX POWER (BASE)

333 W

HEAT OUTPUT

1,136 BTU/h

PRICE

On request

REQUEST A QUOTATION ONLINE
serverinvest.com/product/sys-520p-wtr



01 Product overview

The Supermicro SYS-520P-WTR is a 2U UP Server built on Single Socket P+ (LGA-4189) Intel Xeon Scalable Processors with up to 2 TB of memory in 8 DIMM slots.

2U WIO with 8 hot-swap 3.5" SAS/SATA bays and up to 5 PCIe 4.0 slots.

The chassis accepts up to 1 GPU accelerators for AI, rendering and HPC workloads.

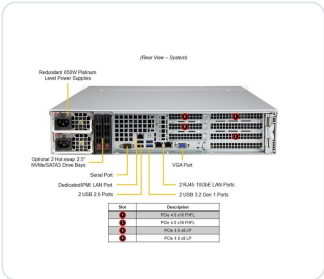
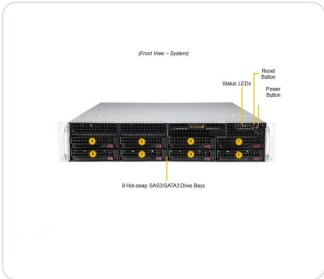
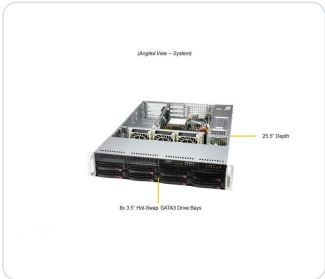
ServerInvest configures every SYS-520P-WTR to order, updates BIOS and BMC firmware, installs your operating system on request and runs a 48-hour burn-in test before delivery. Every system includes a 3-year warranty.

HIGHLIGHTS

- Single Socket P+ (LGA-4189) Intel Xeon Scalable Processors
- Up to 2 TB memory · 8 DIMM slots
- Total 8 bays 8 front hot-swap 3.5" SAS*/SATA drive bays
- Up to 1 GPUs
- Power: 2x 650W
- Networking: 2 RJ45 10GbE with Intel X550

KEY SPECIFICATIONS

Form factor	2U
Processor	Single Socket P+ (LGA-4189) Intel Xeon Scalable Processors
Memory	8 DIMM slots, up to 2 TB
Drive bays	20 (20 NVMe)
GPU	Up to 1 GPUs
Power supply	2× 650 W
Typical power draw	900 W
Networking	2 RJ45 10GbE with Intel X550
Dimensions (W×H×D)	437 × 89 mm



02 Power & thermal

Calculated for the base configuration

IDLE	TYPICAL	MAXIMUM	HEAT (MAX)	COOLING	PSU LOAD
86 W	210 W	333 W	1,136 BTU/h	0.3 kW	51%

Typical 210 W · max 333 W · single PSU rating 650 W

Annual IT energy (24/7)	1,514 kWh
Annual facility energy (PUE 1.5)	2,271 kWh
Annual energy cost	€303 IT · €454 incl. cooling (at 0.20 €/kWh)
CO ₂ emissions / year	0.59 t (grid factor 0.26 kg/kWh)
Power supplies	2× 650 W redundant (N+1)

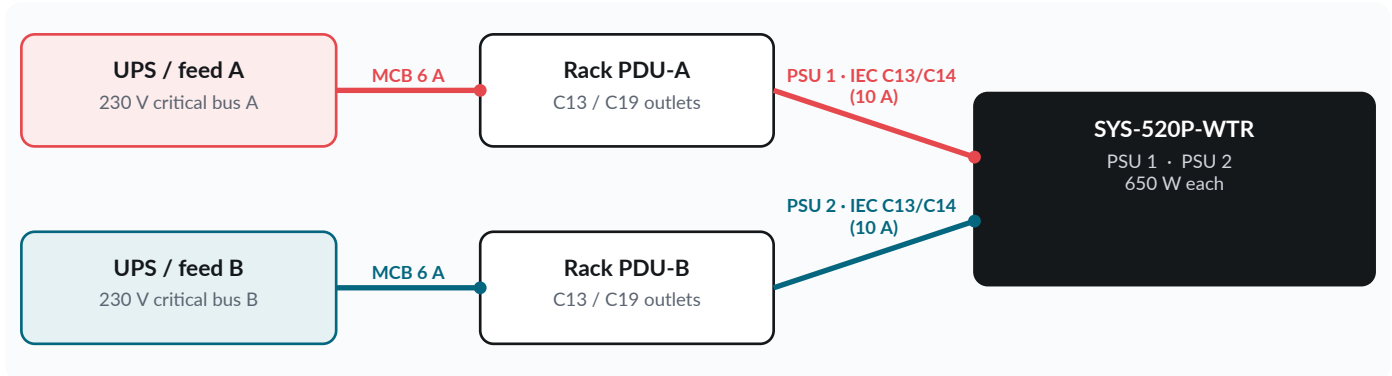
POWER BY COMPONENT

	IDLE	TYPICAL	MAX
Chassis, motherboard, fans, BMC	50 W	77 W	110 W
CPU (base configuration)	25 W	110 W	185 W
2× Memory (base configuration)	6 W	10 W	18 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: 1.5 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: 333 W = 1,136 BTU/h (0.3 kW).

04 Full specifications

MOTHERBOARD

Super X12SPW-TF

PROCESSOR

CPU	Single Socket P+ (LGA-4189) Intel Xeon Scalable Processors
Core Count	Up to 40C/80T; Up to 60MB Cache
Note	Supports up to 270W TDP CPUs (Air Cooled)

GPU

Max GPU Count	Up to 1 double-width or 2 single-width GPUs
Supported GPU	NVIDIA PCIe: RTX 2000 Ada, RTX A2000, RTX A4000, T1000, T400
CPU-GPU Interconnect	PCIe 4.0 x16 CPU-to-GPU Interconnect

SYSTEM MEMORY

Memory	Slot Count: 8 DIMM slots Max Memory (1DPC): Up to 2TB 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
NVMe	NVMe; RAID 0/1 support(Intel VROC RAID key required) View NVMe Options
Network Connectivity	2 RJ45 10GbE with Intel X550 View AOC Options

INPUT / OUTPUT

LAN	2 RJ45 10 GbE LAN ports (Intel X550) 1 RJ45 1 GbE Dedicated BMC LAN port (IPMI shared on LAN port 1)
USB	2 USB 2.0 ports (header) 2 USB 3.2 Gen1 Type-A ports (rear) 2 USB 2.0 Type-A ports (rear) 2 USB 3.2 Gen1 ports (Header) 1 USB 3.2 Gen1 Type-A port
Video	1 VGA 2 port
Serial	1 COM port (Rear) 1 COM port (Header)
DOM	2 Super DOM (Disk on Module) portswith built-in power
TPM	1 TPM header

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!
Power configurations	ACPI/APM Power Management

SECURITY

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

PC HEALTH MONITORING

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

Temperature	Monitoring for CPU and chassis environment Thermal Control for fan connectors
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CERTIFICATIONS

Operating Systems	ESXi 6.7 U3, ESXi 7.0 U2, Hypervisor 8.2, Oracle Linux 8.3, RHEL 8.2, RHEL 9.0, SLES 12 SP5, SLES 15 SP2, SLES 15 SP3, Windows Server 2019, Windows Server 2022 View all OS Compatibility and Certification Matrix
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CHASSIS

Form Factor	2U Rackmount
Model	CSE-825BTS-R609WP

DIMENSIONS AND WEIGHT

Height	3.5" (89 mm)
Width	17.2" (437 mm)
Depth	25.5" (647 mm)
Package	11" (H) x 26.5" (W) x 34" (D)
Weight	Gross Weight: 59 lbs (26.76 kg) Net Weight: 34 lbs (15.42 kg)
Available Color	Black

FRONT PANEL

Buttons	Power On/Off System Reset
LED	Device Activity LAN 1 Activity LAN 2 Activity Power Failure LED Power status System information

EXPANSION SLOTS

PCI-Express (PCIe) Configuration	Default 2 PCIe 4.0 x16 FHFL slots 2 PCIe 4.0 x8 LP slots Option A* 1 PCIe 4.0 x16 FHFL double-width slot 2 PCIe 4.0 x8 FHFL slots 2 PCIe 4.0 x8 LP slots Option B* 4 PCIe 4.0 x8 FHFL slots 2 PCIe 4.0 x8 LP slots (*Requires additional parts, please see the optional parts list for details. For more details on PCIe slot configuration options, please refer to the system callout images above.) View AOC Options
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DRIVE BAYS / STORAGE

Drive Bays Configuration

Default: Total 8 bays 8 front hot-swap 3.5" SAS*/SATA drive bays
Option A: Total 10 bays 8 front hot-swap 3.5" SAS*/SATA drive bays
2 rear hot-swap 2.5" PCIe 4.0 NVMe*/SAS*/SATA drive bays
(*NVMe/SAS support may require additional storage controller and/or cables, please see the optional parts list for details)
[View NVMe Options](#)
[View Drive Options](#)

M.2

1 M.2 PCIe 3.0 x4 NVMe/SATA slot (M-key 2280/22110; VROC required for RAID)
[View M.2 Options](#)

SYSTEM COOLING

Fans

Up to 3 heavy duty PWM 80x80x38mm Fan(s)

Air Shroud

1 Air Shroud

POWER SUPPLY

2x 650W
2x 650W Redundant (1 + 1) Platinum Level (94%) power supplies
Dimension (WxHxL)
76 x 40 x 336 mm

OPERATING ENVIRONMENT

Environmental Spec.

Operating Temperature: 10°C to 35°C (50°F to 95°F)
Non-operating Temperature: -40°C to 70°C (-40°F to 158°F)
Operating Relative Humidity: 8% to 90% (non-condensing)
Non-operating Relative Humidity: 5% to 95% (non-condensing)

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-520p-wtr/datasheet/manufacture

