

## SuperServer 2028U-TNRT+ (Complete System Only)



**Integrated Board**



**Super X10DRU-i+**

**Views: | [Angled View](#) | [Top View](#) |  
| [Front View](#) | [Rear View](#) |**

**Complete System Only:** To maintain quality and integrity, this product is sold only as a completely-assembled system (with minimum 2 CPUs and 4 DIMMs).

▶ [Drivers & Utilities](#) ▶ [BIOS](#) ▶ [IPMI](#) ▶ [Tested Memory](#) ▶ [NVMe Options](#) ▶ [Manuals](#) ▶ [OS Certification Matrix](#) ▶ [Compatible GPU List](#) ▶ [Quick-References Guide](#) ▶ [Drive Options](#) ▶ [Network Card \(AOC\) Matrix](#)

Note: Image above may show a varied configuration of optional parts. Please refer to parts list for standard parts included.

### Key Features

#### Flexible Connectivity Options

1. Dual socket R3 (LGA 2011) supports Intel® Xeon® processor E5-2600 v4<sup>†</sup>/ v3 family; QPI up to 9.6GT/s
2. Up to **3TB<sup>†</sup>** ECC 3DS LRDIMM , up to DDR4- **2400<sup>†</sup>**MHz ; 24 DIMM slots
3. 7 PCI-E 3.0 x8 slots (5 FH, 10.5" L, 1 LP, 1 Internal LP)
4. 2x 10GBase-T ports
5. 24 Hot-swap 2.5" Drive Bays: Default 8 SATA3 ports and 4 NVMe ports; Optional 24 SAS3 ports via AOC; Optional 2 hot-swap 2.5" rear drive bays for SSDs
6. 4 heavy duty fans w/ optimal fan speed control
7. 1000W High efficiency (96%) Redundant PSU; **Titanium Level**

# Specifications

## Product SKUs

<b>SYS-2028U-TNRT+</b>	■ SuperServer 2028U-TNRT+ (Black)
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## Motherboard

### Super X10DRU-i+

## Processor/Cache

<b>CPU</b>	■ Intel® Xeon® processor E5-2600 v4† / v3 family (up to 160W TDP) * ■ Dual Socket R3 (LGA 2011)
<b>Cores / Cache</b>	■ Up to <b>22 Cores</b> † / Up to <b>55MB</b> † Cache
<b>System Bus</b>	■ QPI up to 9.6 GT/s
<b>Note</b>	† BIOS version 2.0 or above is required
<b>Note</b>	* Please contact Supermicro Technical Support for additional information about frequency optimized CPUs and specialized system optimization.

## System Memory

<b>Memory Capacity</b>	■ 24x 288-pin DDR4 DIMM slots ■ Up to 3TB† ECC 3DS LRDIMM, 768GB ECC RDIMM
<b>Memory Type</b>	■ <b>2400</b> †/2133/1866/1600MHz ECC DDR4 SDRAM 72-bit ■ 2666/2400 ECC DDR4 NVDIMM
<b>DIMM Sizes</b>	■ 64GB, 32GB, 16GB, 8GB, 4GB ■ NVDIMM: 16GB
<b>Memory Voltage</b>	■ 1.2 V
<b>Error Detection</b>	■ Corrects single-bit errors

## On-Board Devices

<b>Chipset</b>	■ Intel® C612 chipset
<b>SATA</b>	■ SATA3 (6Gbps) with RAID 0, 1, 5, 10
<b>IPMI</b>	■ Support for Intelligent Platform Management Interface v.2.0 ■ IPMI 2.0 with virtual media over LAN and KVM-over-LAN support ■ ASPEED AST2400 BMC
<b>Network Connectivity</b>	■ 2x 10GBase-T ports via <a href="#">AOC-2UR8N4-i2XT</a> ■ Intel® X540 10GBase-T ■ 1x Realtek RTL8211E PHY (dedicated IPMI)
<b>Graphics</b>	■ ASPEED AST2400 BMC

## Input / Output

<b>SATA</b>	■ 8x SATA3 (6Gbps) ports
<b>SAS</b>	■ 24x SAS3 ports support via optional Add-on Cards
<b>NVMe</b>	■ 4x NVMe ports
<b>LAN</b>	■ 2x 10GBase-T LAN ports ■ 1x RJ45 Dedicated IPMI LAN port
<b>USB</b>	■ 5x USB 3.0 ports (2 rear, 2 onboard header, 1 Type A)

## Chassis

<b>Form Factor</b>	■ 2U Rackmount
<b>Model</b>	■ <b>CSE-219UAC-R1K02</b>

## Dimensions and Weight

<b>Width</b>	■ 17.2" (437mm)
<b>Height</b>	■ 3.5" (89mm)
<b>Depth</b>	■ 27.76" (705.3mm)
<b>Weight</b>	■ Net Weight: 36 lbs (16.4 kg) ■ Gross Weight: 72 lbs (32.7 kg)
<b>Available Colors</b>	■ Black

## Front Panel

<b>Buttons</b>	■ Power On/Off button ■ System Reset button
<b>LEDs</b>	■ Power status LED ■ HDD activity LED ■ 2x Network activity LEDs ■ System information (overheat/UID) LED

## Expansion Slots

<b>PCI-Express</b>	■ 7x PCI-E 3.0 x8 slots (5x FH, 10.5" L, 1x LP, 1x Internal LP)  ■ <b>(Both CPUs need to be installed for full access to PCI-E slots and onboard controllers. See manual block diagram and <a href="#">AOC Support</a> for details.)</b>
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## Drive Bays

<b>Hot-swap</b>	■ 24x 2.5" Hot-swap drive bays ■ Default 8x SATA3 ports and 4x NVMe ports ■ Optional 24x SAS3 ports via AOC  ■ <b>Note: optional storage card is required to support more than 10 drives.</b>
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## System Cooling

<b>Fans</b>	■ 4x 8cm heavy duty PWM fans
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## Power Supply

1000W Redundant Power Supplies with PMBus	
<b>Total Output Power</b>	■ 800W: 100 – 127Vac ■ 1000W: 200 – 240Vac ■ 1000W: 200 – 240Vdc (for CCC only)
<b>Dimension (W x H x L)</b>	■ 73.5 x 40 x 203 mm
<b>Input</b>	■ 100-127Vac / 9.8 - 7A / 50-60Hz ■ 200-240Vac / 7 - 5A / 50-60Hz ■ 200-240Vdc / 7 - 5A (for CCC only)
<b>+12V</b>	■ Max: 66.7A / Min: 0A (100-127Vac) ■ Max: 83A / Min: 0A (200-240Vac) ■ Max: 83A / Min: 0A (200-240Vdc)



<b>Video</b>	<ul style="list-style-type: none"> <li>1x VGA Connector</li> </ul>
<b>Serial Port / Header</b>	<ul style="list-style-type: none"> <li>1x Serial header</li> </ul>
<b>DOM</b>	<ul style="list-style-type: none"> <li>2x SuperDOM (Disk on Module) ports</li> </ul>

#### System BIOS

<b>BIOS Type</b>	<ul style="list-style-type: none"> <li>128Mb SPI Flash EEPROM with AMI BIOS</li> </ul>
<b>BIOS Features</b>	<ul style="list-style-type: none"> <li>Plug and Play (PnP)</li> <li>APM 1.2</li> <li>PCI 2.3</li> <li>ACPI 1.0 / 2.0 / 3.0 / 4.0</li> <li>USB Keyboard support</li> <li>SMBIOS 2.7.1</li> <li>UEFI 2.3.1</li> </ul>

#### Management

<b>Software</b>	<ul style="list-style-type: none"> <li><u>SuperDoctor@ 5</u></li> <li>Intel® Node Manager 3.0</li> <li>Watch Dog</li> <li>NMI</li> <li><u>SSM</u> and <u>SSM</u></li> <li>Optional IPMI 1.5 / 2.0</li> </ul>
<b>Power Configurations</b>	<ul style="list-style-type: none"> <li>ACPI Power Management</li> <li>Power-on mode for AC power recovery</li> </ul>

<b>12Vsb</b>	<ul style="list-style-type: none"> <li>Max: 2.1A / Min: 0A</li> </ul>
<b>Output Type</b>	<ul style="list-style-type: none"> <li>25 Pairs Gold Finger Connector</li> </ul>
<b>Certification</b>	  <b>Titanium Level</b> <b>[ Test Report ]</b>

#### PC Health Monitoring

<b>Voltage</b>	<ul style="list-style-type: none"> <li>Monitors for CPU Cores, +1.8V, +3.3V, +5V, +12V, +3.3V Standby, +5V Standby, VBAT, Memory Voltages.</li> <li>5+1 Phase-switching voltage regulator</li> </ul>
<b>FAN</b>	<ul style="list-style-type: none"> <li>8x 4-pin fan headers</li> <li>Status monitor for speed control</li> <li>Pulse Width Modulated (PWM) fan connectors</li> </ul>
<b>Temperature</b>	<ul style="list-style-type: none"> <li>Support to monitor Supermicro AOC temperatures from IPMI or SD 5</li> <li>Monitoring for CPU and chassis environment</li> <li>CPU thermal trip support</li> <li>Thermal Control for 8x Fan Connectors</li> <li>Thermal Monitor 2 (TM2) support</li> <li>PECI</li> </ul>
<b>LED</b>	<ul style="list-style-type: none"> <li>Memory DIMM ECC error LEDs</li> <li>CPU / System Overheat LED</li> <li>Suspend static indicator LED</li> <li>UID/Remote UID</li> </ul>
<b>Other Features</b>	<ul style="list-style-type: none"> <li>4x 8-pin GPU power connectors</li> <li>Chassis intrusion detection</li> <li>Chassis intrusion header</li> <li>SDDC Support</li> <li>RoHS</li> </ul>

#### Operating Environment / Compliance

<b>RoHS</b>	<ul style="list-style-type: none"> <li>RoHS Compliant</li> </ul>
<b>Environmental Spec.</b>	<ul style="list-style-type: none"> <li>Operating Temperature: 10°C to 35°C (50°F to 95°F)</li> <li>Non-operating Temperature: -40°C to 70°C (-40°F to 158°F)</li> <li>Operating Relative Humidity: 8% to 90% (non-condensing)</li> <li>Non-operating Relative Humidity: 5% to 95% (non-condensing)</li> </ul>

## Parts List

### Parts List - (Items Included)

	Part Number	Qty	Description
<b>Motherboard / Chassis</b>	MBD-X10DRU-i+	1	Super X10DRU-i+ Motherboard
	CSE-219UAC-R1K02	1	2U Chassis
<b>Add-on Card / Module</b>	AOC-2UR8N4-I2XT	1	2U Ultra Riser based on Intel X540 controller with 2 10Gbase-T ports, 4 NVMe ports, 1 internal PCI-E x8 3.0 slot, and 1 PCI-E x8 3.0 (in x16 slot)
<b>Air Shroud</b>	MCP-310-82912-0N	1	
<b>Backplane</b>	BPN-SAS3-216A-N4	1	24-port 2U SAS3 12Gbps hybrid backplane, support up to 20x 2.5-inch SAS3/SATA3 HDD/SSD and 4x SAS3/SATA3/NVMe Storage Devices
<b>Cable 1</b>	CBL-SAST-0658	4	MINI SAS HD,INT,PCIe NVMe SSD, 60CM,30AWG
<b>Cable 2</b>	CBL-SAST-0657	2	MINI SAS HD(ST)-MINI SAS(RA-RS EXIT),6G,INT,55CM,SB,30AWG
<b>Cable 3</b>	CBL-PWEX-0673	3	8 pin female to 2x big 4 pin female power, 65/70CM, 18AWG,RoHS/REACH
<b>Parts</b>	MCP-240-82909-0N	1	Ultra I/O bracket for SC829U, 219U (i2XT),RoHS/REACH
<b>Drive Tray(s)</b>	MCP-220-00127-0B	4	Black gen-3 2.5 NVMe drive tray, Orange tab with lock (for hotswap NVMe drive),HF,RoHS/REACH
<b>Label</b>	LBL-0108	1	CAUTION LABEL FOR REDUNDANT PWR SYSTEMS
<b>Manual</b>	MNL-1695-QRG	1	SYS-2028U-T(N)R(4/4T/T/TP)+, QRG,HF,RoHS/REACH
<b>Riser Card</b>	RSC-R2UW-4E8	1	2U LHS WIO Riser card with four PCI-E x4 slots
<b>Riser Card</b>	RSC-R1UW-E8R	1	1U RHS WIO Riser card with one PCI-E x8 slot
<b>Heatsink / Retention</b>	SNK-P0058PSU	2	2U Passive CPU Heat Sink for X10 2U 24-DIMM Ultra Series Servers,RoHS/REACH
<b>Power Supply</b>	PWS-1K02A-1R	2	1U 1000W Redundant Power Supply 73.5mm width Titanium Level,RoHS/REACH
<b>Mounting Rails</b>	MCP-290-00053-0N	1	Inner/outer rail set, quick-release type, 26.5" to 36.4"
	MCP-290-00060-0N	1	Threaded rail adapter default for round hole rack

### Optional Parts List

	Part Number	Qty	Description
<b>Mounting Rails</b>	MCP-290-00053-0N	-	Inner/outer rail set, quick-release type, 26.5" to 36.4"
	MCP-290-00060-0N	-	Threaded rail adapter default for round hole rack
<b>2U Ultra optional rear drive kit</b>	MCP-240-82922-0N-OEM & MCP-240-82915-0N-OEM	1	Rear 2x2.5" HDDs riser bracket kit for SC829U/219U, tool-less
<b>2U Cable Management Arm</b>	MCP-290-00128-0N & MCP-290-00127-0N	1	2U Supermicro Cable Management Arm 2nd Gen (Compatible for racks that are 42" in depth)
<b>Storage Control Card and Cable(s)</b>	AOC-S3008L-L8e & 2x CBL-SAST-0593	-	Std LP, 8 internal ports, 12Gb/s per port- Gen3, 122HDD, HBA; Internal Mini-SAS HD to Mini-SAS HD 60cm,30AWG,12Gb/s
	AOC-S3008L-L8i & 2x CBL-SAST-0593	-	Std LP, 8 internal ports, 12Gb/s per port- Gen3, 63HDD, RAID 0,1,1E; Internal Mini-SAS HD to Mini-SAS HD 60cm,30AWG,12Gb/s
	AOC-S3108L-H8iR & 2x CBL-SAST-0593	-	Std LP, 8 internal ports, 12Gb/s per port- Gen3, 240HDD, RAID 0, 1, 5, 6, 10, 50, 60; Internal Mini-SAS HD to Mini-SAS HD 60cm,30AWG,12Gb/s
<b>Network Card(s)</b>	AOC-SGP-i2/4	-	Standard LP, 2/4x GbE RJ45, PCI-E x4, Intel i350
	AOC-STGN-i1S/i2S	-	Standard LP, 1/2x 10GbE SFP+, PCI-E x8, Intel 82599EN
	AOC-STG-b4S	-	Standard LP, 4x 10GbE SFP+, PCI-E x8, Broadcom BCM57840S
	AOC-STG-i2T	-	Standard LP, 2x 10GbE RJ45, PCI-E x8, Intel X540
	AOC-STG-i2	-	Standard LP, 2x 10GbE CX4, PCI-E x8, Intel 82598EB
	AOC-S40G-i2Q	-	Standard LP 2-port 40GbE controller, based on Intel Fortville XL710
	More	-	<a href="#">AOC Compatibility Matrix</a>
<b>CacheVault(s)</b>	BTR-CV3108-U1	-	CacheVault for Broadcom 3108 with Supercap mounting for 2U Ultra

<b>Global Services &amp; Support</b>	<u>OS4HR3/2/1</u>	-	3/2/1-year onsite 24x7x4 service
	<u>OSNBD3/2/1</u>	-	3/2/1-year onsite NBD service
<b>Software</b>	<u>SFT-OOB-LIC</u> • <i>eStore</i>	1	OOB Management Package (per node license)
<b>Software</b>	<u>SFT-DCMS-Single</u>	1	DataCenter Management Package (per node license)