

SuperServer F648G2-FT+



Key Features

2 Hot-plug System Nodes in 4U Front I/O. 6x GPU/Xeon Phi per node. Each node supports:

1. Dual socket R3 (LGA 2011) supports Intel® Xeon® processor E5-2600 v4[†]/ v3 family; QPI up to 9.6GT/s
2. Up to 2TB[†] ECC 3DS LRDIMM , up to DDR4- 2400[†]MHz ; 16x DIMM slots
3. 6 PCI-E 3.0 x16 Double-width GPU/Xeon Phi; 2 PCI-E 3.0 x8 (Full-height, Half-length) slots
4. Front I/O ports: 2 GbE, 2 USB 3.0 and 1 VGA connector
5. Built-in Server management tool (IPMI 2.0, KVM/media over LAN) w/ dedicated LAN port
6. 8x 2.5" Hot-swap SATA3 drive bays
7. 2000W High efficiency (96%) Redundant PSU; Titanium Level

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

Specifications

| Product SKUs | |
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| SYS-F648G2-FT+ | ▪ SuperServer F648G2-FT+ (Black) |
| Motherboard | |
| Super X10DRFF-IG | |
| Processor/Cache | |
| CPU | <ul style="list-style-type: none"> ▪ Intel® Xeon® processor E5-2600 v4[†]/ v3 family (up to 145W TDP) * ▪ Dual Socket R3 (LGA 2011) |
| Cores / Cache | ▪ Up to 22 Cores [†] / Up to 55MB [†] Cache |
| System Bus | ▪ QPI up to 9.6 GT/s |
| Note | [†] BIOS version 2.0 or above is required |
| Note | * Please contact Supermicro Technical Support for additional information about frequency optimized CPUs and specialized system optimization. |
| GPU/Xeon | <ul style="list-style-type: none"> ▪ 6x Double-width GPU/Xeon Phi per node (total of 12x GPU/Xeon Phi cards in 4U) ▪ Supports Intel Xeon Phi |

| Chassis | |
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| Form Factor | ▪ 4U Rackmount |
| Model | ▪ CSE-F442BG-R2K04B |
| Dimensions | |
| Width | ▪ 17.63" (448mm) |
| Height | ▪ 6.96" (177mm) |
| Depth | ▪ 35" (889mm) |
| Package | ▪ 25.6" (W) x 11.8" (H) x 48.0" (D) |
| Weight | <ul style="list-style-type: none"> ▪ Net Weight: 105 lbs (47.63 kg) ▪ Gross Weight: 150 lbs (68.04 kg) |
| Available Colors | ▪ Black |
| Front Panel | |
| Buttons | <ul style="list-style-type: none"> ▪ Power On/Off button ▪ UID button |
| LEDs | <ul style="list-style-type: none"> ▪ Power status LED ▪ UID LED |
| Expansion Slots (per node) | |
| ▪ 6x PCI-E 3.0 x16 Double-width GPU/Xeon | |

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| Phi Support | <ul style="list-style-type: none"> Supports NVIDIA K1/K2/K10/K20M/K20X/K40M/K80(only supports 4 per node), Xeon Phi 5110P, and Xeon Phi 3120P/7120P |
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System Memory

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| Memory Capacity | <ul style="list-style-type: none"> 16x 288-pin DDR4 DIMM slots Up to 2TB[†] ECC 3DS LRDIMM, 1TB ECC RDIMM |
| Memory Type | <ul style="list-style-type: none"> 2400[†]/2133/1866/1600MHz ECC DDR4 SDRAM 72-bit |
| DIMM Sizes | <ul style="list-style-type: none"> RDIMM: 32GB, 16GB, 8GB, 4GB LRDIMM: 64GB, 32GB 3DS LRDIMM: 128GB |
| Memory Voltage | <ul style="list-style-type: none"> 1.2 V |
| Error Detection | <ul style="list-style-type: none"> Corrects single-bit errors |

On-Board Devices

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| Chipset | <ul style="list-style-type: none"> Intel® C612 chipset |
| SATA | <ul style="list-style-type: none"> SATA3 (6Gbps) with RAID 0, 1, 5, 10 |
| IPMI | <ul style="list-style-type: none"> 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 |
| Network Controllers | <ul style="list-style-type: none"> Intel® i350 Dual Port GbE LAN Virtual Machine Device Queues reduce I/O overhead Supports 10BASE-T, 100BASE-TX, and 1000BASE-T, RJ45 output 1x Realtek RTL8211E PHY (dedicated IPMI) |
| Graphics | <ul style="list-style-type: none"> ASPEED AST2400 BMC |

Input / Output (per node)

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| SATA | <ul style="list-style-type: none"> 8x SATA3 (6Gbps) ports |
| LAN | <ul style="list-style-type: none"> 2x RJ45 GbE LAN ports 1x RJ45 Dedicated IPMI LAN port |
| USB | <ul style="list-style-type: none"> 2x USB 3.0 ports |
| VGA | <ul style="list-style-type: none"> 1x VGA port |

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| PCI-Express | <ul style="list-style-type: none"> Phi 2x PCI-E 3.0 x8 slots (Full-height, Half-length) |
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Drive Bays (per node)

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| Hot-swap | <ul style="list-style-type: none"> 8x 2.5" Hot-swap drive bays |
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System Cooling

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| Fans/Air Shroud | <ul style="list-style-type: none"> 8x 80mm heavy duty fans with air shroud and PWM fan speed control and additional fans available |
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Power Supply (76mm Width)

2000W Redundant Power Supplies with PMBus

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| Total Output Power | <ul style="list-style-type: none"> 1000W/2000W |
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| Dimension (W x H x L) | <ul style="list-style-type: none"> 76 x 40.4 x 336 mm |
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| Input | <ul style="list-style-type: none"> 100-127 Vac / 12-9.5 A / 50-60 Hz 200-220 Vac / 10-9.5 A / 50-60 Hz 220-230 Vac / 10-9.8 A / 50-60 Hz 230-240 Vac / 10-9.8 A / 50-60 Hz 200-240 Vac / 11.8-10 A / 50-60 Hz (UL/cUL only) |
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| +12V | <ul style="list-style-type: none"> Max: 83.3A & Min: 0A (100-127 Vac) Max: 150A & Min: 0A (200-220 Vac) Max: 165A & Min: 0A (220-230 Vac) Max: 166.7A & Min: 0A (230-240 Vac) Max: 166.7A & Min: 0A (200-240 Vac)(UL/cUL only) |
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| +5Vsb | <ul style="list-style-type: none"> Max: 1A / Min: 0A |
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| Output Type | <ul style="list-style-type: none"> 27 Pairs Gold Finger Connector |
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| Certification |   <ul style="list-style-type: none"> UL/cUL/CB/BSMI/CE/CCC Titanium Level [Test Report] |
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System BIOS

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| BIOS Type | <ul style="list-style-type: none"> 128Mb SPI Flash EEPROM with AMI BIOS |
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| BIOS Features | <ul style="list-style-type: none"> Plug and Play (PnP) APM 1.2 PCI 2.2 ACPI 1.0 / 2.0 USB Keyboard support SMBIOS 2.3 UEFI |
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Operating Environment / Compliance

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| RoHS | <ul style="list-style-type: none"> RoHS Compliant |
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| Environmental Spec. | <ul style="list-style-type: none"> 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) |
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Parts List

| Parts List - (Items Included) | | | |
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| | Part Number | Qty | Description |
| Motherboard / Chassis | MBD-X10DRFF-ITG | 4 | Super X10DRFF-ITG Motherboard |
| | CSE-F442BG-R2K04B | 1 | 4U Chassis |
| Backplane | BPN-SAS-I28A | 2 | BPN-SAS-I28A |
| Backplane | BPN-ADP-4UGPU-P | 4 | Backplan adapter card for 4UGPU,RoHS/REACH,PBF |
| Backplane | BPN-ADP-F418L | 4 | BPN;SASADP;SAS827-H8;H8DTT;cable req |
| Cable 1 | CBL-PWEX-0460-05 | 2 | 8 pin male to two big 4 pin female power cable, 35cm and 22cm. 18AWG,HF,RoHS/REACH,PBF |
| Cable 2 | CBL-SAST-0583 | 4 | Cross-over lpass to 4 SATA w/SB. S. 24cm. 30AWG,HF,RoHS/REACH,PBF |
| Label | LBL-0108 | 1 | CAUTION LABEL FOR REDUNDANT PWR SYSTEMS |
| Manual | MNL-1740-QRG | 1 | Quick Reference Guide for F648G2-FT+ / FTPT+ |
| Riser Card | RSC-R2UFF-X2E16B | 2 | RSC-R2UFF-X2E16B ,RoHS/REACH,PBF |
| Riser Card | RSC-R4UFF-A4E16B | 2 | RSC-R4UFF-A4E16B |
| Riser Card | RSC-R4UFF-A2E16A | 2 | RSC-R4UFF-A2E16A |
| Heatsink / Retention | SNK-P0048PS | 4 | 2U Passive CPU Heat Sink for X9, X10 Generation Systems Equipped w/ a Narrow ILM MB |
| Power Supply | PWS-2K04A-1R | 4 | AC-DC 2000W, Titanium Level, Redundancy, 1U, PMBus 1.2, +12V/+5Vsb, 360x76x40mm,HF,RoHS/REACH |

| Optional Parts List | | | |
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| | Part Number | Qty | Description |
| Internal Fan | FAN-0150L4 | 8 | Rear internal fan for cooling enhancement |
| Software | SFT-OOB-LIC | 1 | OOB Management Package (per node license) |
| Software | SFT-DCMS-Single | 1 | DataCenter Management Package (per node license) |

Note: Power redundancy is based on configuration. For more information, please refer to user manual.