

# SuperServer F648G2-FC0PT+



## 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 10GBase-T, 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 SAS3 drives via LSI 3008 controller
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

SYS-F648G2-FC0PT+	▪ SuperServer F648G2-FC0PT+ (Black)
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### Motherboard

Super X10DRFF-CTG

### Processor/Cache

CPU	▪ Intel® Xeon® processor E5-2600 v4†/ v3 family (up to 145W TDP) * ▪ Dual Socket R3 (LGA 2011)
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Cores / Cache	▪ Up to 22 Cores† / Up to 55MB† Cache
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System Bus	▪ QPI up to 9.6 GT/s
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Note	† BIOS version 2.0 or above is required
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Note	* Please contact Supermicro Technical Support for additional information about frequency optimized CPUs and specialized system optimization.
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- 6x Double-width GPU/Xeon Phi per node (total of 12x GPU/Xeon Phi cards in 4U)

### Chassis

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	▪ Net Weight: 105 lbs (47.63 kg) ▪ Gross Weight: 150 lbs (68.04 kg)

Available Colors	▪ Black
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### Front Panel

Buttons	▪ Power On/Off button ▪ UID button
LEDs	▪ Power status LED ▪ UID LED

### Expansion Slots (per node)

- 6x PCI-E 3.0 x16 Double-width GPU/Xeon Phi

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

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

### On-Board Devices

Chipset	<ul style="list-style-type: none"> <li>Intel® C612 chipset</li> </ul>
SAS	<ul style="list-style-type: none"> <li>SAS3 (12Gbps) via LSI 3008</li> <li>SW RAID 0, 1, 10 support</li> </ul>
AHCI SATA	<ul style="list-style-type: none"> <li>SATA 3.0 6Gbps with RAID 0, 1</li> </ul>
IPMI	<ul style="list-style-type: none"> <li>Support for Intelligent Platform Management Interface v.2.0</li> <li>IPMI 2.0 with virtual media over LAN and KVM-over-LAN support</li> <li>ASPEED AST2400 BMC</li> </ul>
Network Controllers	<ul style="list-style-type: none"> <li>Intel® X540 Dual Port 10GBase-T</li> <li>Virtual Machine Device Queues reduce I/O overhead</li> <li>Supports 100BASE-T, 1000BASE-T, 10G Base-T, RJ45 output</li> <li>1x Realtek RTL8211E PHY (dedicated IPMI)</li> </ul>
Graphics	<ul style="list-style-type: none"> <li>ASPEED AST2400 BMC</li> </ul>

### Input / Output (per node)

SAS	<ul style="list-style-type: none"> <li>8x SAS3 (12Gbps) ports</li> </ul>
LAN	<ul style="list-style-type: none"> <li>2x RJ45 10GBase-T LAN ports</li> <li>1x RJ45 Dedicated IPMI LAN port</li> </ul>
USB	<ul style="list-style-type: none"> <li>2x USB 3.0 ports</li> </ul>
VGA	<ul style="list-style-type: none"> <li>1x VGA port</li> </ul>

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



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

Fans/Air Shroud	<ul style="list-style-type: none"> <li>8x 80mm heavy duty fans with air shroud and PWM fan speed control and additional fans available</li> </ul>
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### Power Supply with Digital Switching Control

#### 2000W Redundant Titanium Level Power Supplies

Total Output Power	<ul style="list-style-type: none"> <li>1000W/1800W/1980W/2000W</li> </ul>
AC Input	<ul style="list-style-type: none"> <li>100-127 V, 50-60 Hz</li> <li>200-220 V, 50-60 Hz</li> <li>220-230 V, 50-60 Hz</li> <li>230-240 V, 50-60 Hz</li> </ul>
+12V	<ul style="list-style-type: none"> <li>Max: 83.3A &amp; Min: 0A (100Vac-127Vac)</li> <li>Max: 150A &amp; Min: 0A (200Vac-220Vac)</li> <li>Max: 165A &amp; Min: 0A (220Vac-230Vac)</li> <li>Max: 166.7A &amp; Min: 0A (230Vac-240Vac)</li> </ul>
5V SB	<ul style="list-style-type: none"> <li>Max: 1A / Min: 0A</li> </ul>
Certification	  Titanium Level <a href="#">[ Test Report ]</a>

### System BIOS

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

### Operating Environment / Compliance

RoHS	<ul style="list-style-type: none"> <li>RoHS Compliant</li> </ul>
Environmental Spec.	<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-X10DRFF-CTG	4	Super X10DRFF-CTG Motherboard
	CSE-F442BG-R2K04B	1	4U Chassis
<b>Backplane</b>	BPN-SAS3-I28A	2	,RoHS/REACH,PBF SAS3 BPN - 8x2.5" SSD/HDD hotswap drive bays for CSE-M28SAC chassis,overheat indicator,SGPIO support SES2 mngt,2 mini-SAS HD connector(SFF-8643),1 fan connector with fan fail detection
<b>Backplane</b>	BPN-ADP-4UGPU-P	4	Backplan adapter card for 4UGPU,RoHS/REACH,PBF
<b>Backplane</b>	BPN-ADP-F418L	4	BPN;SASADP;SAS827-H8;H8DTT;cable req
<b>Cable 1</b>	CBL-PWEX-0460-05	2	8 pin male to two big 4 pin female power cable, 35cm and 22cm. 18AWG,HF,RoHS/REACH,PBF
<b>Cable 2</b>	CBL-SAST-0550	4	Internal Mini-SAS HD to Mini-SAS HD 25cm,30AWG,12Gb/s,HF,RoHS/REACH,PBF
<b>Label</b>	LBL-0108	1	CAUTION LABEL FOR REDUNDANT PWR SYSTEMS
<b>Manual</b>	MNL-1756-QRG	1	A Quick Reference Guide for SYS-F648G2-FC0(PT)+,HF,RoHS/REACH
<b>Riser Card</b>	RSC-R4UFF-A4E16B	2	RSC-R4UFF-A4E16B
<b>Riser Card</b>	RSC-R2UFF-X2E16B	2	RSC-R2UFF-X2E16B ,RoHS/REACH,PBF
<b>Riser Card</b>	RSC-R4UFF-A2E16A	2	RSC-R4UFF-A2E16A
<b>Heatsink / Retention</b>	SNK-P0048PS	4	2U Passive CPU Heat Sink for X9, X10 Generation Systems Equipped w/ a Narrow ILM MB
<b>Power Supply</b>	PWS-2K04A-1R	4	AC-DC 2000W, Titanium Level, Redundancy, 1U, PMBus 1.2, +12V/+5Vsb, 360x76x40mm,HF,RoHS/REACH

Optional Parts List			
	Part Number	Qty	Description
<b>Internal Fan</b>	FAN-0150L4	8	Rear internal fan for cooling enhancement
<b>Software</b>	SFT-OOB-LIC	1	OOB Management Package (per node license)
<b>Software</b>	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.