



Intel® Server D50DNP Family

Intel® Server Board D50DNP

Intel® D50DNP Modules

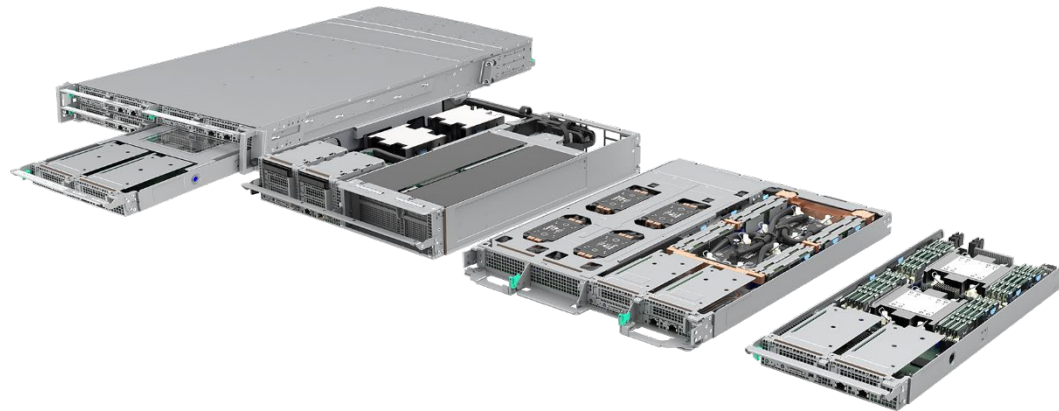
Intel® Server System D50DNP

Configuration Guide

A reference document to identify available building blocks, integrated systems, accessories, and spare parts associated with the Intel® Server D50DNP Family.

Rev. 1.5

July 2024



D50DNP

Delivering Breakthrough Data Center System Innovation – Experience What's Inside!

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Document Revision History

Date	Revision	Changes
January 2023	1.0	Production Release
June 2023	1.1	<ul style="list-style-type: none"> • Changed content and description for DNPLCDMTM • Updated description for M.2 SSD cold plate kit • Added information for VROC support and license key • Removed VROC header from board illustration Figure 7. • Removed information about Intel® Optane™ PMem 300 series modules • Corrected trademarked names (PCIe*, NVMe* and MCIO*) to follow guideline • Replaced V100 bracket kit TNPACCLBZV100 with the bracket kit DNPACCLBZPVC for Intel® Data Center GPU Max Series Accelerator PCIe card • Corrected the product codes for Intel® Data Center GPU Max Series CBB spare part.
August 2023	1.2	<ul style="list-style-type: none"> • Changed cable iPN in the bracket kit DNPACCLBZPVC
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February 2024	1.4	<ul style="list-style-type: none"> • Added 5th Gen Intel® Xeon® Scalable processor family support information
July 2024	1.5	<ul style="list-style-type: none"> • Corrected MM# for DNPLCDIMMCLIPM on page 61

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1. Overview

This document provides a catalog of available Intel boards, modules, chassis, accessories, and spares for the Intel® Server D50DNP Family.

1.1 Product Family Overview

The Intel® Server D50DNP Family includes products that support demanding high-performance computing (HPC) and artificial intelligence (AI) applications and workloads. The building blocks in the product family allow custom development of server systems using an Intel-developed server board or density-optimized Intel® D50DNP Modules. The product family also includes fully integrated 2U rack-mount, multi-module systems. The Intel® Server D50DNP Family offers options to support liquid-cooled and air-cooled configurations.

The core products that define the high-performance, density-optimized Intel® Server D50DNP Family include:

- **Intel® Server Board D50DNP1SB** – Server board only product that offers the server system developers the choice of integrating the server board within their own modules and server chassis. The server board can also be used as a spare Field Replaceable Unit (FRU).
- **Intel® D50DNP Modules** – Options of density-optimized 1U and 2U modules (building block option and spare FRU) integrated with the Intel® Server Board D50DNP1SB.
- **Intel® Server Systems D50DNP** – Options of 2U rack-mount server systems configured with Intel® D50DNP Modules and integrated with Intel® Server Chassis FC2000.

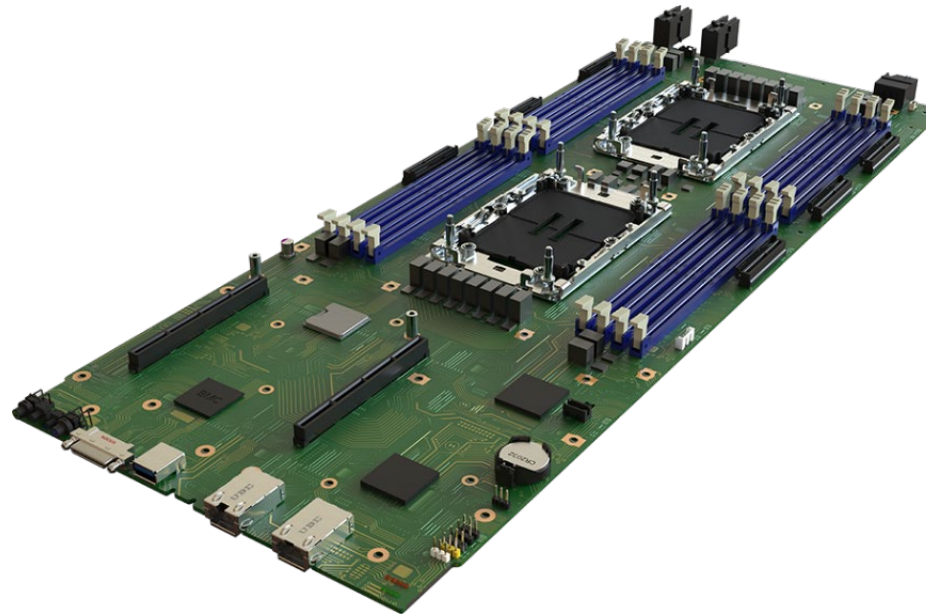


Figure 1. Intel® Server Board D50DNP1SB

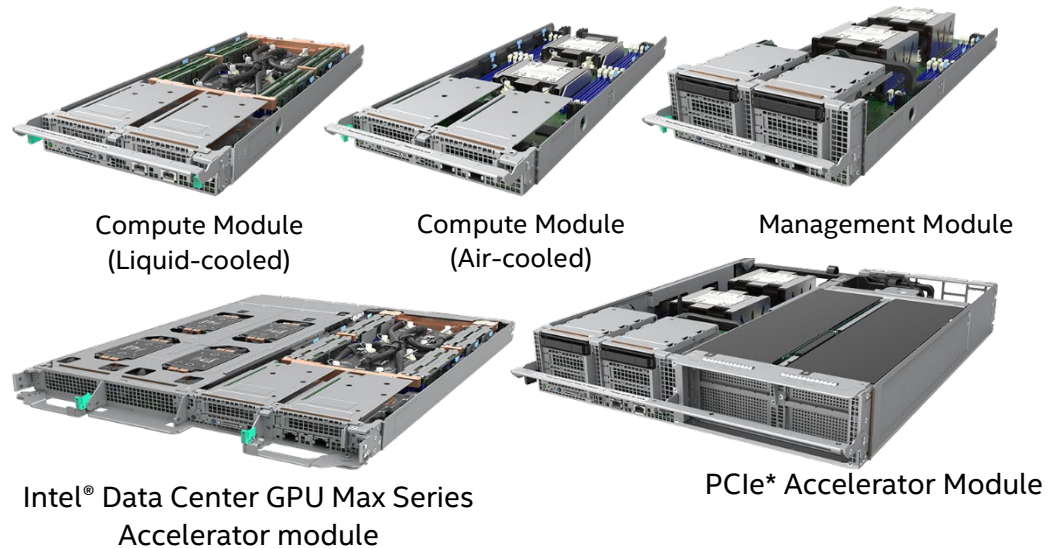


Figure 2. Intel® D50DNP Modules

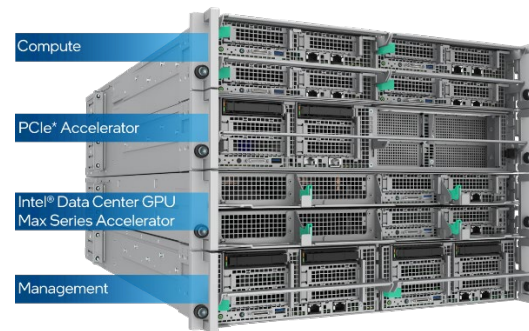


Figure 3. Intel® Server Systems D50DNP

The following options are available for ordering boards, modules, and systems:

L3 = Server board product.

L6 = Modules building block option with an integrated Intel® Server Board D50DNP1SB. The base configuration is non-functional out of the box. Additional integration of chassis and components is required.

L9 = Fully integrated system. Pre-configured. The base configuration is power-on ready. No operating system installed.

Important Note: Fully configured (power-on ready, no operating system) L9 systems are only orderable from Intel using its online Configure-To-Order (CTO) tool at orderconfigurator.intel.com (Intel NDA required) or by contacting your Intel sales representative.

1.2 Processor Support

The supported 4th & 5th Gen Intel® Xeon® Scalable Processor Family and Intel® Xeon® CPU Max Series processor shelves are identified as shown in the following figure.

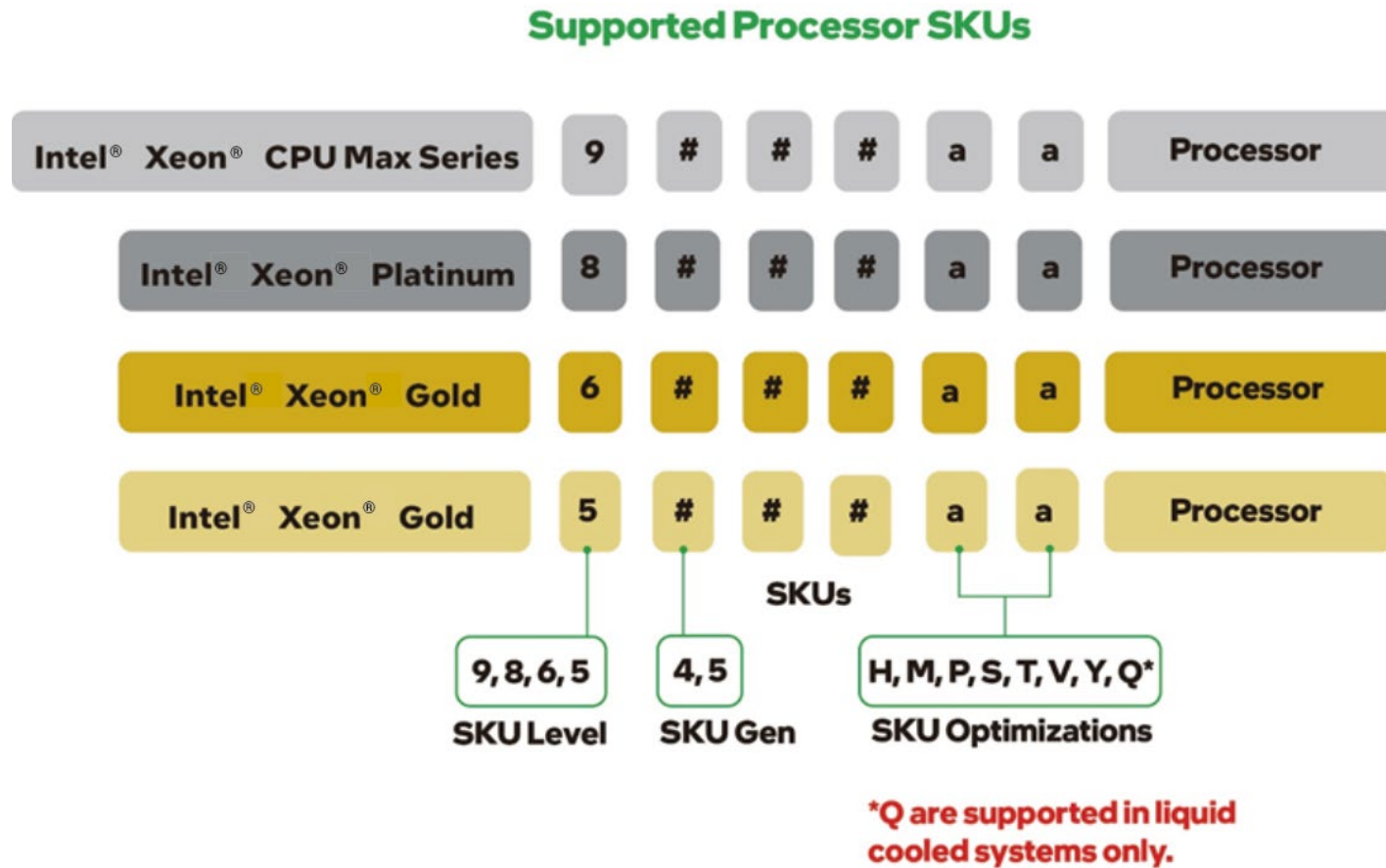


Figure 4. 4th & 5th Gen Intel® Xeon® Scalable Processor Family Identification

Notes:

- 4th & 5th Gen Intel® Xeon® Scalable processors SKUs that end in “N” or “U” are not supported. All other processor SKUs are supported.

Table 1. 4th & 5th Gen Intel® Xeon® Scalable Processor Family Feature Comparison

Feature	Platinum 8xxx Processors	Gold 6xxx Processors	Gold 5xxx Processors
Dual-socket Scalability	Yes	Yes	Yes
# of Intel® UPI 2.0 Links	4 ¹	3	3
Intel® UPI 2.0 Speed for 4 th Gen Intel® Xeon® Scalable Processor	16 GT/s	16 GT/s	16 GT/s
Intel® UPI 2.0 Speed for 5 th Gen Intel® Xeon® Scalable Processor	20 GT/s	20 GT/s	20 GT/s
# of DDR5 Integrated Memory Controllers (IMC)	4	4	4
# of DDR5 Channels	8	8	8
# of PCIe* 5.0/CXL Lanes	80	80	80
Intel® Turbo Boost Technology	Yes	Yes	Yes
Intel® Hyper-Threading Technology (Intel® HT Technology)	Yes	Yes	Yes
Intel® Advanced Vector Extensions 512 (Intel® AVX-512) ISA Support	Yes	Yes	Yes
Intel® AVX-512 - # of 512b FMA Units	2	2	2
Processor RAS Capability	Advanced	Advanced	Advanced

Notes: (1) Intel® Server Board D50DNP1SB supports up to 3 Intel® UPI 2.0 links.

Table 2. Intel® Xeon® CPU Max Series Processor Family Features

Feature ¹	Intel® Xeon® CPU MAX Processors
HBM2e capacity per socket ²	64 GB
Dual-socket Scalability	Yes
# of Intel® UPI 2.0 Links	4 ³
Intel® UPI 2.0 Speed	16 GT/s
# of DDR5 Integrated Memory Controllers (IMC)	4
# of DDR5 Channels	8
# of PCIe/CXL Lanes	80
Intel® Turbo Boost Technology	Yes
Intel® Hyper-Threading Technology	Yes
Intel® AVX-512 ISA Support	Yes
Intel® AVX-512 - # of 512b FMA Units	2
SGX enclave size up to (GB) ⁴	512GB
Processor RAS Capability	Advanced

Notes: (1) Features may vary between processor MODELS. **(2)** Indicates new capabilities relative to 4th Gen Intel® Xeon® Scalable processors. **(3)** Intel® Server Board D50DNP1SB supports up to 3 Intel® UPI 2.0 links, **(4)** SGX available only for DDR5 in Flat mode.

1.3 Memory Support

The Intel® Server D50DNP Family supports DDR5 SDRAM DIMMs with the following features:

- Registered DDR5 DIMM (standard RDIMM, 3DS-RDIMM, and 9x4 RDIMM)
Note: 3DS = 3-dimensional stacking.
- All DDR5 RDIMMs must support ECC.
- RDIMMs with thermal sensor on-DIMM (TSOD)
- RDIMM speeds of up to 5600 MT/s (for 5th Gen Intel® Xeon® Scalable processor 1 DPC)
- RDIMM speeds of up to 4800 MT/s (for 4th Gen Intel® Xeon® Scalable processor 1 DPC)
- RDIMM capacities of 8 GB, 16 GB, 32 GB, 64 GB, and 128 GB
- RDIMMs organized as Single Rank (SR), Dual Rank (DR)
- 3DS-RDIMM organized as Quad Rank (QR) or Octa Rank (OR)

Note: DDR5 5600 128GB memory is under validation

1.3.1 Memory Subsystem Architecture

The Intel® Server Board D50DNP1SB includes eight memory slots per processor as shown in the following figure.

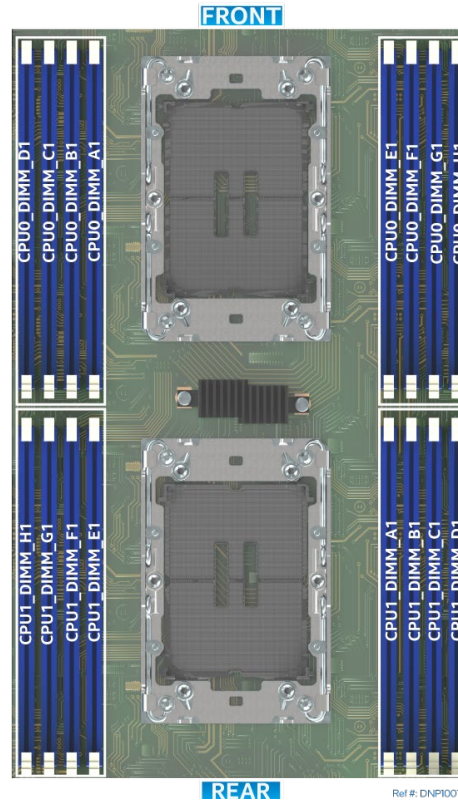


Figure 5. Memory Slot Layout

The following figure shows that each processor has four Integrated Memory Controllers (IMCs), each supporting two memory channels. Memory channels are identified by letters A through H. Each memory channel supports one memory slot.

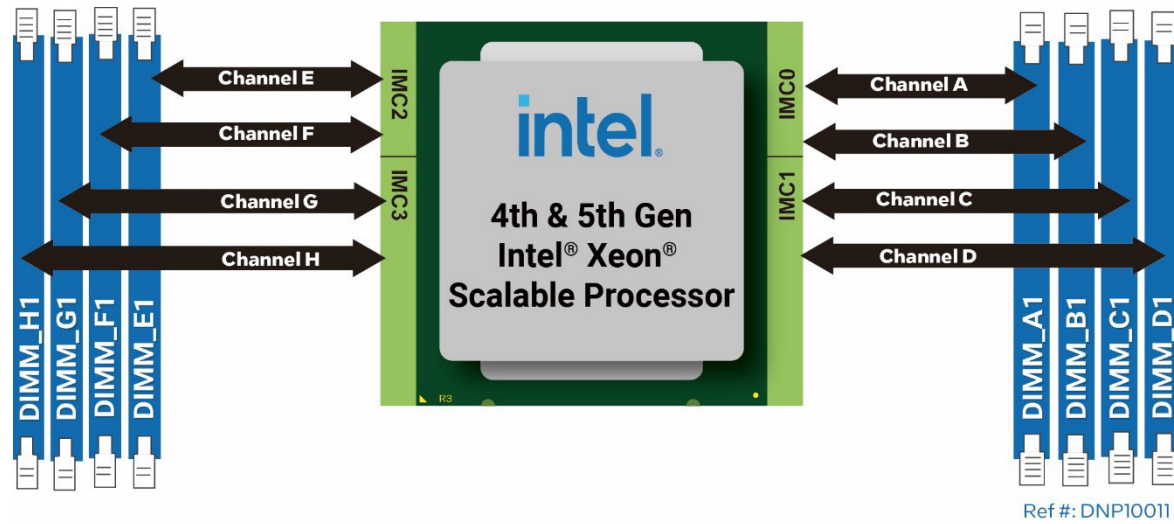


Figure 6. Memory Slot Connectivity for D50DNP1SB

To maintain proper airflow for air-cooled configurations, it is necessary to populate all memory slots with either memory modules or DIMM blanks. Preinstalled DIMM blanks must only be removed when installing a memory module in its place. Liquid-cooled configurations require all DIMM slots to be populated with DDR5 DIMMs.

Intel DDR5 DIMM Support Disclaimer:

Intel validates and only supports system configurations where all installed DDR5 DIMMs have matching “Identical” or “Like” attributes (see the following table). A system configured concurrently with DDR5 DIMMs from different vendors are supported by Intel if all other DDR5 “Like” DIMM attributes match.

Intel does not perform system validation testing. Intel does not support system configurations where all populated DDR5 DIMMs do not have matching “Like” DIMM attributes, as listed in the following table.

Intel only supports Intel® Server systems configured with DDR5 DIMMs that have been validated by Intel and are listed on Intel's Tested Memory list for the given Intel® Server product family.

Intel configures and ships pre-integrated L9 server systems. As shipped by Intel, all DDR5 DIMMs in a given L9 server system are identical. All installed DIMMs have matching attributes as the attributes listed in the “*Identical*” *DDR5 DIMM Attributes* column in the following table.

When purchasing more than one integrated L9 server system with the same configuration from Intel, Intel reserves the right to use “Like” DIMMs between server systems. At a minimum, “Like” DIMMs have matching DIMM attributes as listed in the following table. However, the DIMM model #, revision #, or vendor may differ.

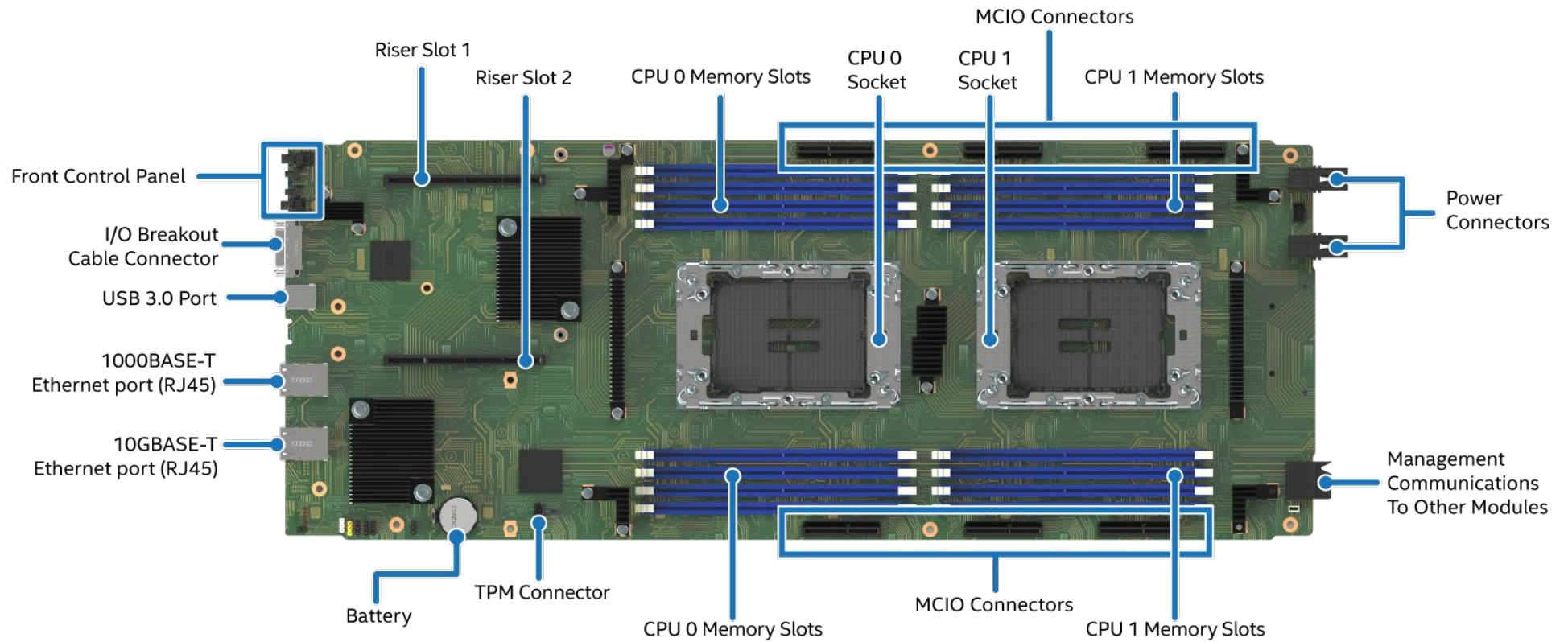
For warranty replacement, Intel makes every effort to ship back an exact match to the one returned. However, Intel may ship back a validated “Like” DIMM. A “Like” DIMM may be from the same vendor but not the same revision # or model # or an Intel-validated DIMM from a different vendor. At a minimum, all “Like” DIMMs shipped from Intel match attributes of the original part according to the definition of “Like” DIMMs in the following table.

Table 3. DDR5 DIMM Attributes Table for “Identical” and “Like” DIMMs

<ul style="list-style-type: none"> • DDR5 DIMMs are considered “Identical” when all listed attributes between the DIMMs match • Two or more DDR5 DIMMs are considered “Like” DIMMs when all attributes minus the Vendor, and/or DIMM Part # and/or DIMM Revision#, are the same. 			
Attribute	“Identical” DDR5 DIMM Attributes	“Like” DDR5 DIMM Attributes	Possible DDR5 Attribute Values
Vendor	Match	May be Different	Memory Vendor Name
DIMM Part #	Match	May be Different	Memory Vendor Part #
DIMM Revision #	Match	May be Different	Memory Vendor Part Revision #
SDRAM Type	Match	Match	DDR5
DIMM Type	Match	Match	RDIMM, 9x4 RDIMM
Speed (MT/s)	Match	Match	4000, 4400, 4800, 5600 (5600 MT/s is for 5 th Gen Xeon only)
Voltage	Match	Match	1.1 V
DIMM Size (GB)	Match	Match	16 GB, 32 GB, 64 GB, 128 GB, 256 GB
Organization	Match	Match	2Gx80; 4Gx80; 8Gx80; 16Gx80; 32Gx80
DIMM Rank	Match	Match	1R, 2R, 4R, 8R
DIMM Raw Card (RC)	Match	Match	RC A, RC B, RC C, RC D, RC E, RC F
DRAM Width	Match	Match	x4, x8
DRAM Density	Match	Match	16Gb

1.4 Intel® Server Board D50DNP Overview

The Intel® Server D50DNP1SB is shown in the following figure.



Ref #: DNP10023

Figure 7. Intel® Server Board D50DNP1SB

Table 4. Intel® Server Board D50DNP Features

Feature	D50DNP1SB
Processor Support	<ul style="list-style-type: none"> Dual Socket- E LGA4677 4th & 5th Gen Intel® Xeon® Scalable processors family models: <ul style="list-style-type: none"> Intel® Xeon® Platinum 84xx/85xx processor Intel® Xeon® Gold 64xx/65xx processor Intel® Xeon® Gold 54xx/55xx processor Intel® Xeon® CPU Max Series Three Intel® UPI links at 16 GT/s for 4th Gen Intel® Xeon® Scalable processor and at 20 GT/s for 5th Gen Intel® Xeon® Scalable processor models <p>Notes:</p> <ul style="list-style-type: none"> 4th & 5th Gen Intel® Xeon® Scalable Processor SKUs ending with “N” or “U” are not supported. All other processor SKUs are supported. Previous generation Intel® Xeon® Processor and Intel® Xeon® Scalable Processor families are not supported.
Maximum Processor Thermal Design Power (TDP)	<ul style="list-style-type: none"> 4th & 5th Gen Intel® Xeon® Scalable processors up to 350 W (server board only) Intel® Xeon® CPU Max Series processors up to 350 W (server board only). <p>Note: The maximum supported processor TDP at the system level may be lower than what the server board can support. Supported power, thermal, and configuration limits of the chosen server chassis need to be considered to determine if the system can support the maximum processor TDP limit of the server board. Refer to the server chassis/system documentation for additional guidance.</p> <p>Note: Support for CPU with 385W TDP in liquid-cooled configuration is under validation.</p>
PCH Chipset	<ul style="list-style-type: none"> Intel® C741 Platform Controller Hub (PCH) chipset Features enabled on this server board: <ul style="list-style-type: none"> SATA III support USB 3.0 support PCIe* 3.0 support
Memory Support	<ul style="list-style-type: none"> Up to 16 DDR5 SDRAM RDIMMs. See Section 1.3 for details. Registered DDR5 DIMM (standard RDIMM, three-dimensional stacking RDIMM (3DS-RDIMM), and 9x4 RDIMM) All DDR5 RDIMMs must support ECC Up to 5600 MT/s data transfer rates (5600 MT/s is supported on 5th Gen Intel® Xeon® Scalable processor only) Up to 2 TB DDR5 memory capacity for both processors (1 TB per processor) for all processor models DDR5 standard voltage of 1.1 V <p>Note: The memory speed supported depends on the installed processor.</p>
Front Panel Support	
I/O Ports	<ul style="list-style-type: none"> One USB 3.0 port One I/O breakout cable connector supporting the following: <ul style="list-style-type: none"> Two USB 3.0 ports (dual-stack) One DE-15 VGA connector One serial port connector. The port follows Advanced Technology pinout specifications. <p>Note: The I/O breakout cable is available as an accessory option (iPC AXXCONNTDBG).</p>
Networking	<ul style="list-style-type: none"> One external 10GBASE-T Ethernet port (RJ45) One external 1000BASE-T Ethernet port (RJ45) dedicated to server management
LEDs	<ul style="list-style-type: none"> Board status Board ID
Buttons	<ul style="list-style-type: none"> Power Board ID Cold reset Non-maskable interrupt (NMI)

Feature	D50DNP1SB
Expansion Options	
Riser Slots	<p>Riser Slot 1 options:</p> <ul style="list-style-type: none"> 1U riser card with single PCIe* 5.0 x16 slot (x16 electrical, x16 mechanical) supporting one low profile PCIe add-in card. PCIe 5.0 lanes are routed from CPU 1 through an MCIO* cable. 2U riser card with two PCIe 5.0 x16 slots (x16 electrical, x16 mechanical), each supporting one low-profile PCIe add-in card. PCIe lanes for the bottom slot are routed from CPU 0. PCIe lanes for the top slot are routed from CPU 1 through an MCIO cable. PCIe lanes for the U.2 SSD are routed from the CPU 1. <p>Riser Slot 2 options:</p> <ul style="list-style-type: none"> 1U riser card with single PCIe 5.0 x16 slot (x16 electrical, x16 mechanical) supporting one low profile PCIe add-in card. PCIe 5.0 lanes routed from CPU 0. 2U riser card with two PCIe 5.0 x16 slots (x16 electrical, x16 mechanical), each supporting one low-profile PCIe add-in card. PCIe lanes for the bottom slot are routed from CPU 0. PCIe lanes for the top slot are routed from CPU 1 through an MCIO cable. PCIe lanes for the U.2 SSD are routed from the CPU 0.
Storage Support	<p>Via riser assemblies:</p> <ul style="list-style-type: none"> Each 1U or 2U riser assembly can accommodate one SATA or PCIe 3.0 NVMe* 80/110mm M.2 SSD drive. SATA and PCIe lanes are routed from the Intel® C741 chipset Each 2U riser assembly can accommodate one 2.5" U.2 NVMe SSD. PCIe lanes for the U.2 SSD in Riser 1 are routed from the CPU 1. PCIe lanes for the U.2 SSD in Riser 2 are routed from the CPU 0. PCIe lanes routed from processor/chipset support Intel® VMD and Intel® VROC 8.0 (NVMe-based RAID). VROC support requires an Intel® VROC license (accessory option, – iPC VROCSTANKEY) to be installed.
Supported Onboard Connectors and Headers	
Mini Cool Edge I/O (MCIO) PCIe Interface Support	<ul style="list-style-type: none"> Two MCIO connectors, each with x16 PCIe 5.0 lanes, are routed from CPU 0 Four MCIO connectors, each with x16 PCIe 5.0 lanes, are routed from CPU 1
Security and Serviceability	
Security Support	<p>Supported security technologies:</p> <ul style="list-style-type: none"> Intel® Platform Firmware Resilience (Intel® PFR) technology 3.0 Intel® Total Memory Encryption – Multi-Key (Intel® TME-MK) Technology Intel® Software Guard Extensions (Intel® SGX) Technology Intel® Converged Boot Guard and Trusted Execution (Intel® CBnT) Technology Trusted platform module 2.0 (China version) – iPC AXXTPMCHNE8 (accessory option) Trusted platform module 2.0 (rest of the world) – iPC AXXTPMENC9 (accessory option) Intel® Trust Domain Extensions (Intel® TDX) (Supported on 5th Gen Intel® Xeon® Scalable processor only)
Server Management	<ul style="list-style-type: none"> Integrated Baseboard Management Controller (BMC) based on the ASPEED* AST2600 Advanced PCIe Graphics and Remote Management Processor Compliant with Intelligent Platform Management Interface (IPMI) 2.0 Compliant with Redfish* Supports OpenBMC Supports Intel® Data Center Manager (Intel® DCM) Supports Intel® Server Debug and Provisioning Tool (Intel® SDP Tool) One external 1000BASE-T Ethernet port (RJ45) dedicated to server management Intel® Light-Guided Diagnostics included with onboard LEDs

Feature	D50DNP1SB		
Onboard Configuration and Service Jumpers	<ul style="list-style-type: none"> • BIOS load defaults • BIOS Password clear • Intel® Management Engine (Intel® ME) firmware force update • BIOS SVN Downgrade • BMC SVN Downgrade 		
BIOS	• Unified Extensible Firmware Interface (UEFI)-based BIOS (legacy boot mode is not supported)		
Module Support	<ul style="list-style-type: none"> • D50DNP1MHCPAC • D50DNP1MHEVAC 	<ul style="list-style-type: none"> • D50DNP1MHCPLC • D50DNP2MHSVAC 	<ul style="list-style-type: none"> • D50DNP1MFALLC • D50DNP2MFALAC

1.5 Intel® D50DNP Modules Overview

The Intel® Server D50DNP Family offers a variety of modules, where each module within a system configuration is independently operated from the others. The installed modules within a chassis share resources like power and cooling. The following table describes how an Intel® Server System D50DNP can be configured.

Table 5. Intel® D50DNP Modules

Module Type	iPC	Height	Width	Cooling	Maximum Processor TDP ¹	Modules per Chassis
Compute	D50DNP1MHCPAC	1U	Half width	Air-cooled	250 W	Up to four
	D50DNP1MHEVAC			Liquid-cooled	270 W	
	D50DNP1MHCPLC				385 W ²	
Management	D50DNP2MHSVAC	2U	Half width	Air-cooled	350 W	Up to two
Intel® Data Center GPU Max Series Accelerator	D50DNP1MFALLC	1U	Full width	Liquid-cooled	385 W ²	Up to two
PCIe* Accelerator	D50DNP2MFALAC	2U	Full width	Air-cooled	350 W	One

Note: (1) See the Intel® Server D50DNP Family technical product specification for detailed information on TDP.

(2) Support for CPU with 385W TDP in Liquid-cooled configuration is under validation.

Mixing different types of modules in the same chassis can only be done as follows:

- Up to two 1U air-cooled compute modules with one 2U air-cooled management module.

For mixed node configurations, the customer must consider the lowest ambient temperature required by the installed processors in the modules. The module requiring the lowest ambient temperature will define the ambient requirements for the whole system, even if other modules allow higher ambient temperature.

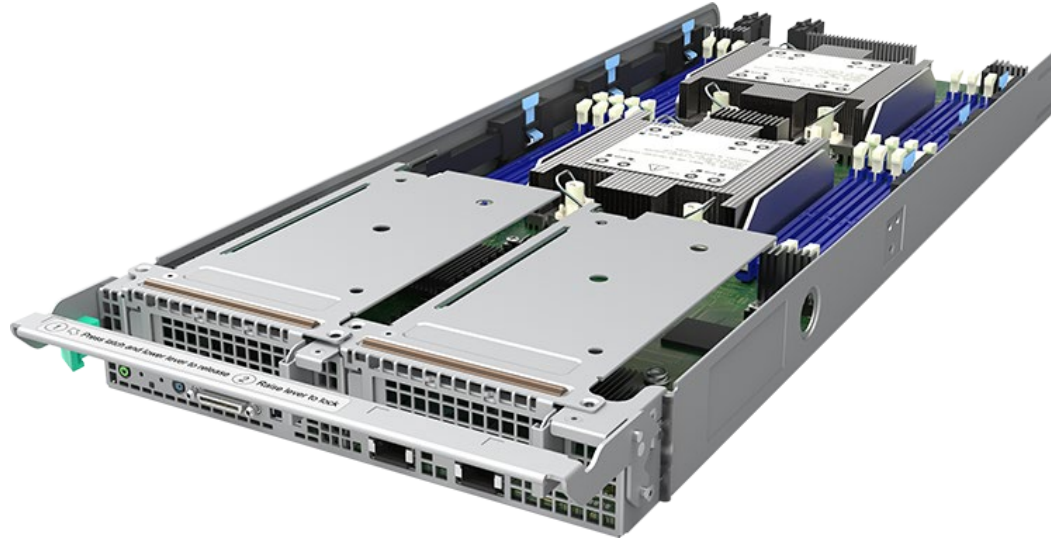
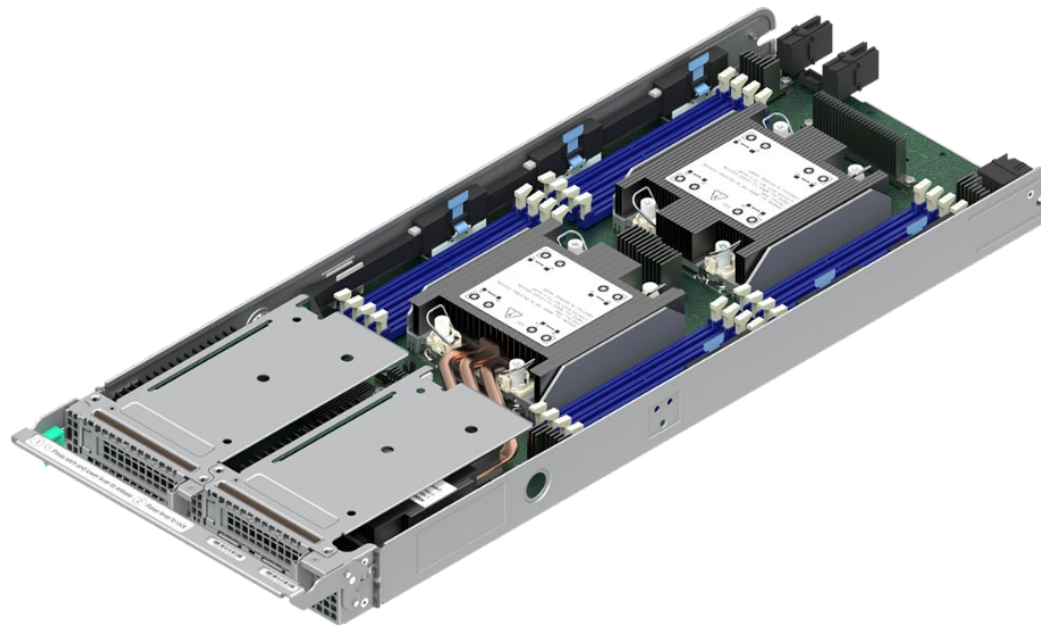


Figure 8. 1U Air-Cooled Compute Module D50DNP1MHCPAC with Standard Heat Sinks



Ref #: DNP30620

Figure 9. 1U Air-cooled Compute Module D50DNP1MHEVAC with EVAC heat sink

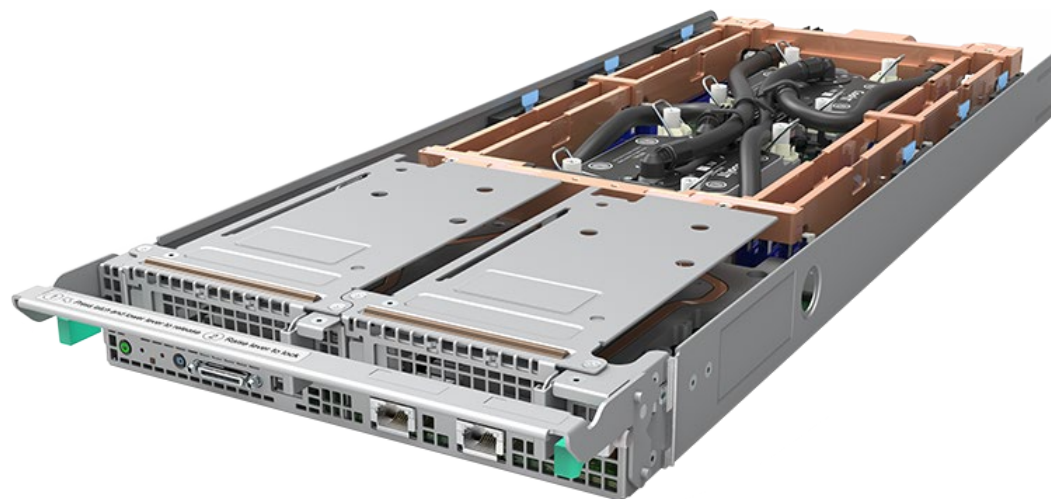
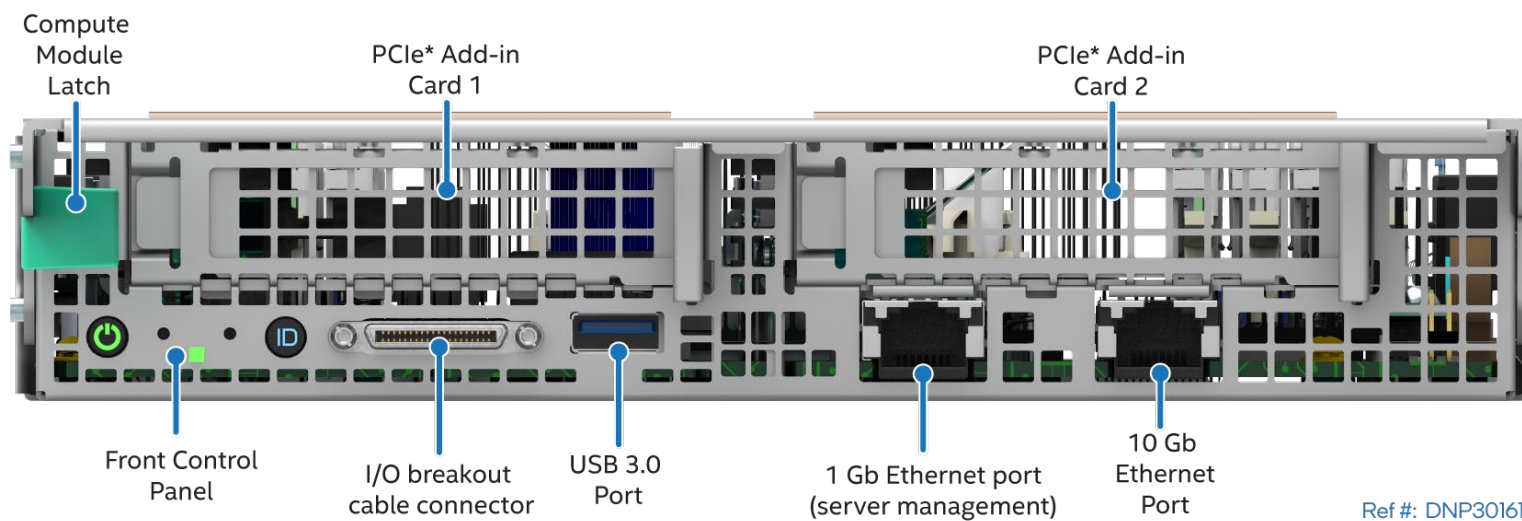


Figure 10. 1U Liquid-Cooled Compute Module D50DNP1MHCPLC



Ref #: DNP30161

Figure 11. 1U Compute Module Front Panel Features

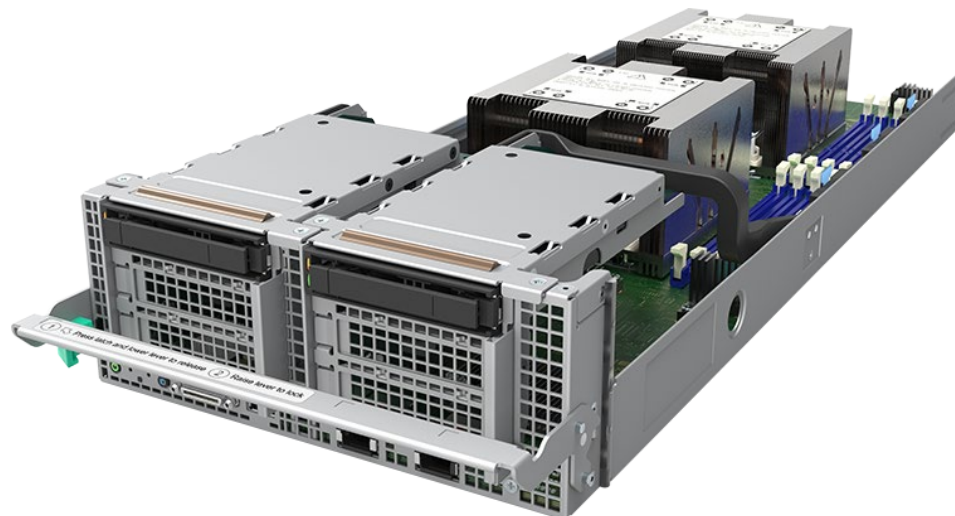
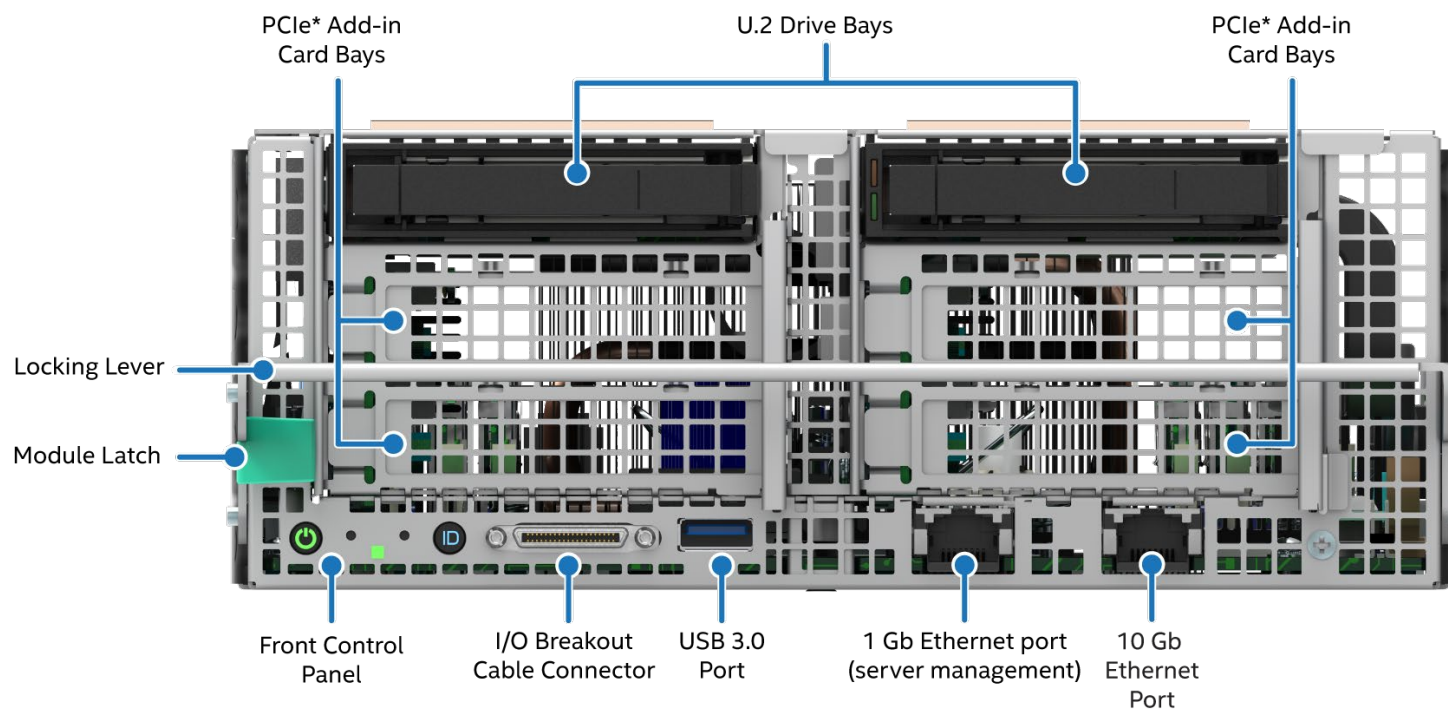


Figure 12. 2U Air-Cooled Management Module D50DNP2MHSVAC



Ref #: DNP30132

Figure 13. 2U Management Module Front Panel Features

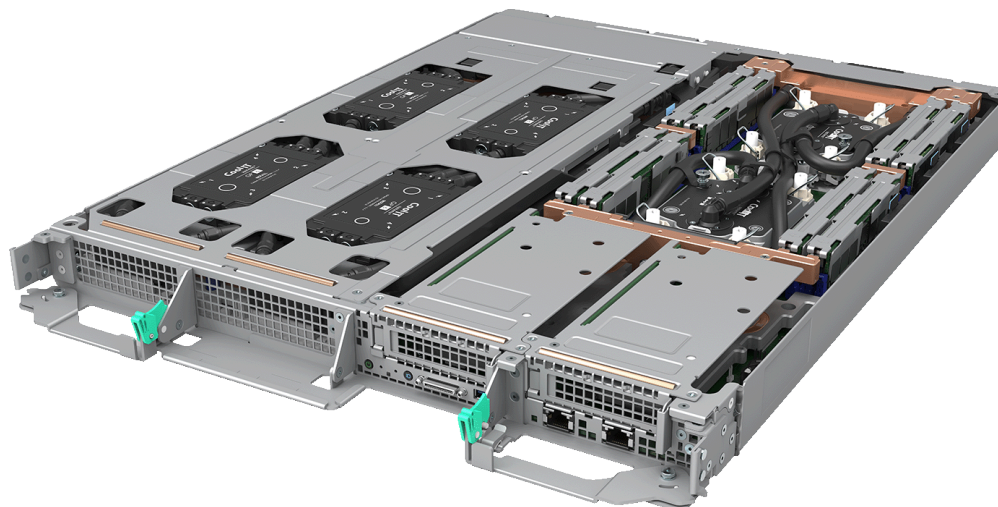
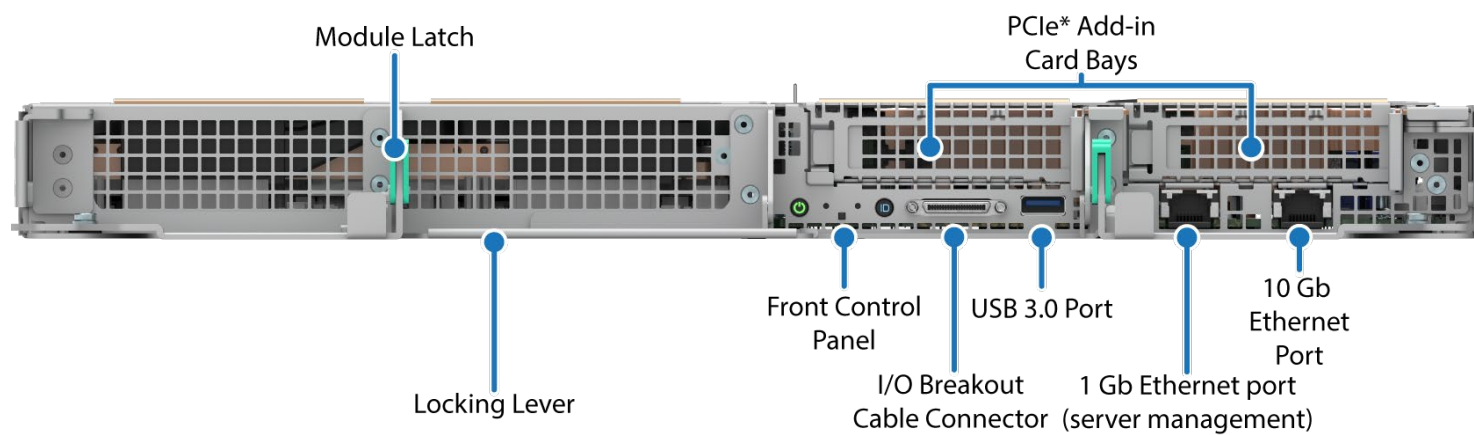


Figure 14. 1U Intel® Data Center GPU Max Series Accelerator Module D50DNP1MFALLC



Ref #: DNP30563

Figure 15. 1U Intel® Data Center GPU Max Series Accelerator Module Front Panel Features

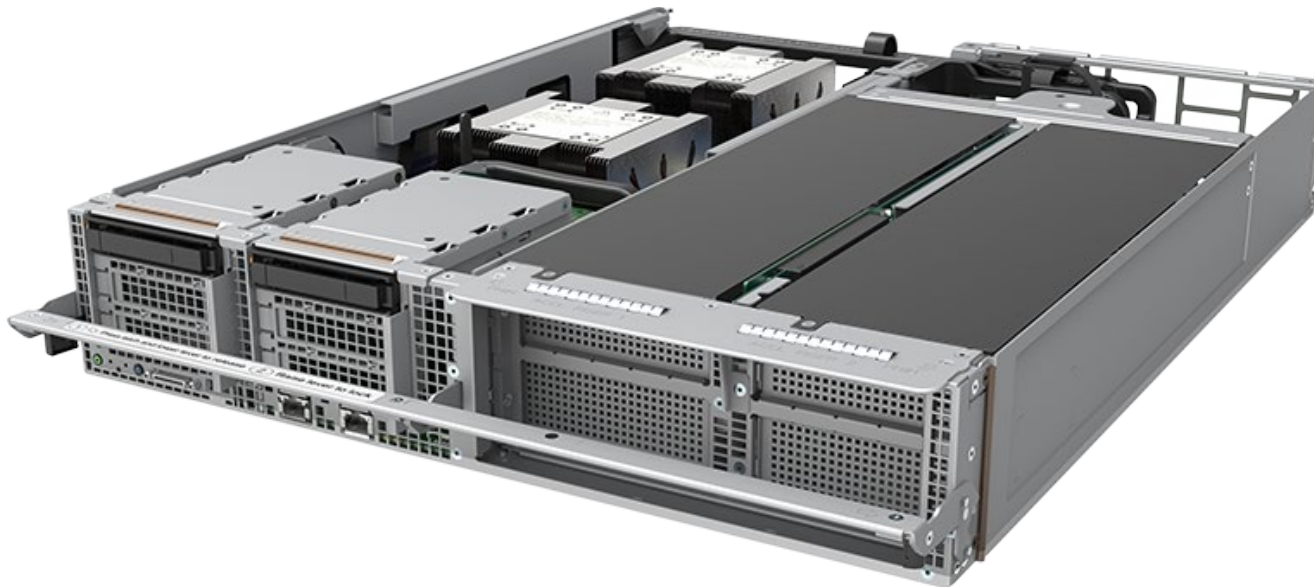
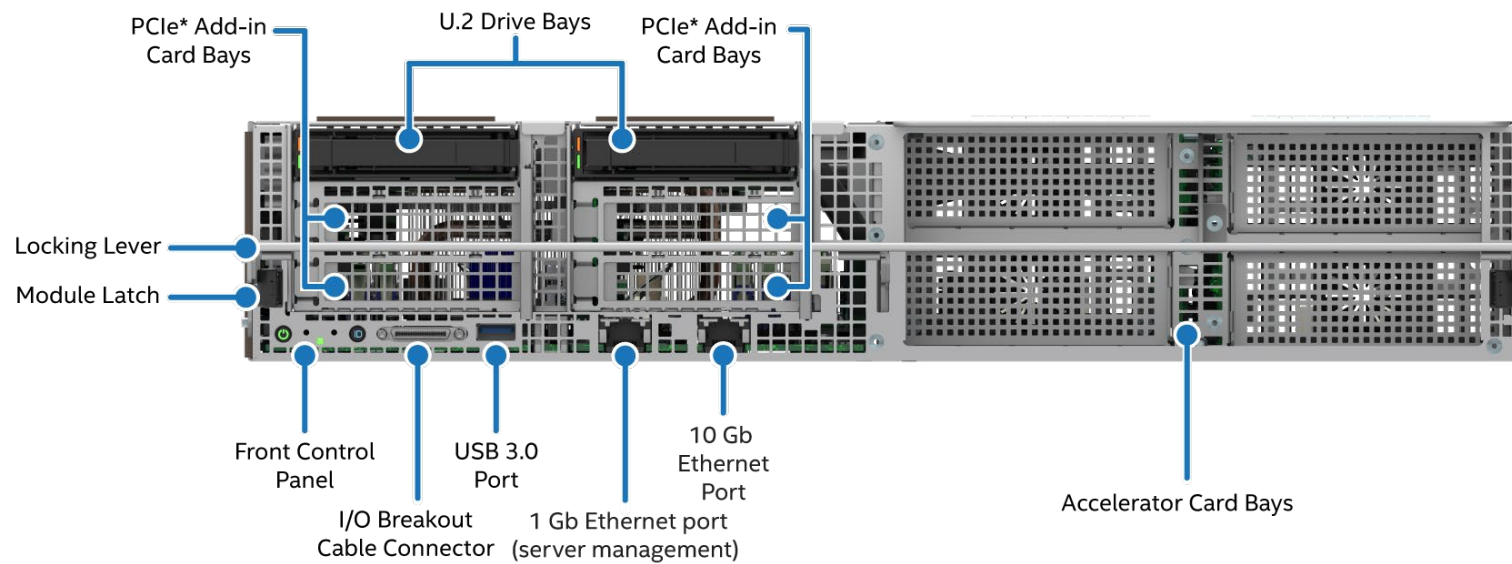


Figure 16. 2U Air-Cooled 2U PCIe* Accelerator Module D50DNP2MFALAC



Ref #: DNP30082

Figure 17. 2U PCIe Accelerator Module Front Panel Features

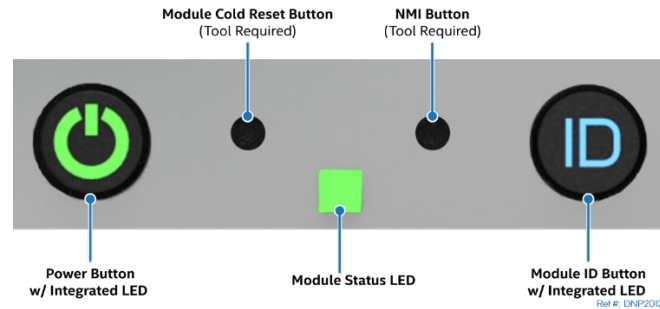


Figure 18. Front Control Panel Features for All Modules

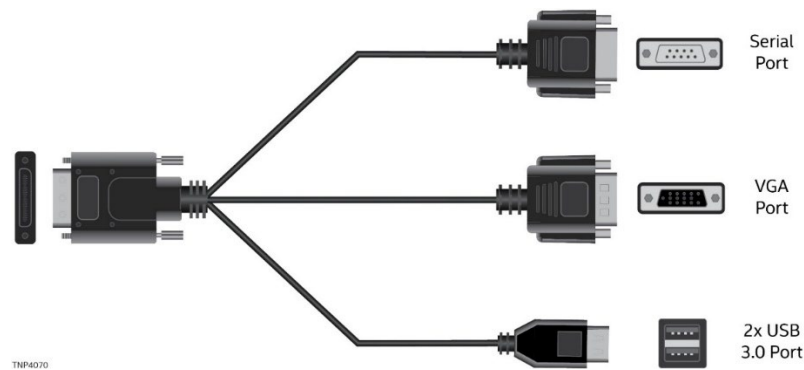


Figure 19. I/O Breakout Cable Connector Identification

1.6 Intel® Server System D50DNP / Chassis Overview

As a building block, the Intel® Server D50DNP Family includes four Intel® Server Chassis FC2000 products. These four chassis-only products are listed below. See [Table 6](#) for a list of system and chassis-only features.

- 2U half-width configuration, liquid-cooled – iPC **FC2HLC30W0**
 - Supports up to four 1U half-width liquid-cooled modules
- 2U full-width configuration, liquid-cooled – iPC **FC2FLC30W0**
 - Supports up to two 1U full-width liquid-cooled modules
- 2U half-width configuration, air-cooled – iPC **FC2HAC27W0**
 - Supports up to four 1U half-width modules
 - Supports up to two 2U half-width air-cooled modules
 - Supports one 2U half-width module and two 1U half-width air-cooled modules
- 2U full-width configuration, air-cooled – iPC **FC2FAC27W0**
 - Supports one 2U full-width air-cooled module

Table 6. Intel® Server Chassis D50DNP Feature Set

Feature	Description			
	Chassis model iPC FC2HLC30W0	Chassis model iPC FC2FLC30W0	Chassis model iPC FC2HAC27W0	Chassis model iPC FC2FAC27W0
Chassis Definition	FC2000 half-width configuration, liquid-cooled	FC2000 full-width configuration, liquid-cooled	FC2000 half-width configuration, air-cooled	FC2000 full-width configuration, air-cooled
Chassis Type	2U, rack-mount, multi-module			2U rack-mount, single module
Chassis Dimensions	• 865 x 442 x 86.8 mm			
Packaging Dimensions	• 1192 x 758 x 317 mm (L x W x H)			
Supported Intel® D50DNP Modules	• Up to four 1U half-width modules (liquid-cooled)	• Up to two 1U full-width Intel® Data Center GPU Max Series Accelerator modules (liquid-cooled)	• Up to four 1U half-width modules (air-cooled) • One 2U half-width module and two 1U half-width modules (air-cooled) • Up to two 2U half-width modules (air-cooled)	• One 2U full-width PCIe* Accelerator Module (air-cooled)
Cooling	Liquid-cooled configurations: <ul style="list-style-type: none">Liquid-cooling loop (per module)Liquid-cooling plumbing connections on the back of the chassisTwo 40 x 40 x 40 mm fans		Air-cooled configurations: <ul style="list-style-type: none">Eight dual-rotor hot-swap system fans with support for fan redundancy<ul style="list-style-type: none">Four 60 x 60 x 56 mm fansImportant Note: Only install 60-mm system fans that are designed for the Intel® Server D50DNP chassis (iPC FCXX60MMACFAN). Do not install 60-mm system fans from previous Intel® Server product generations.<ul style="list-style-type: none">Four 40 x 40 x 40 mm fansOne 40-mm fan per installed power supply unit (PSU)	
Power	Supports up to four 3000 W AC liquid-cooled power supplies with power redundancy support (dependent on system configuration). Minimum two power supplies are required for any configuration. PSUs are sold separately.		Supports up to four 2700 W AC air-cooled power supplies with power redundancy support (dependent on system configuration). Minimum two power supplies are required for any configuration. PSUs are sold separately.	
Rack Mount Kit (FCXXRAILKIT)	• Tool-less installation • Fixed position Note: Rack mount kit is included with chassis.			
Serviceability	Modular chassis features for simplified serviceability: <ul style="list-style-type: none">Fully independent Intel® D50DNP ModulesHot-swap power suppliesHot-swap system fansHot-swap U.2 solid state drive (SSD) storage (dependent on Intel® D50DNP Module)			
Operating Temp.	10–35°C ambient temperature			
Server Management	Optional Ethernet Management Port (EMP) to consolidate management of the Intel® D50DNP Modules			

All systems in the Intel® Server D50DNP Family feature front-loading modules. The following illustrations provide system views for all supported system configurations.

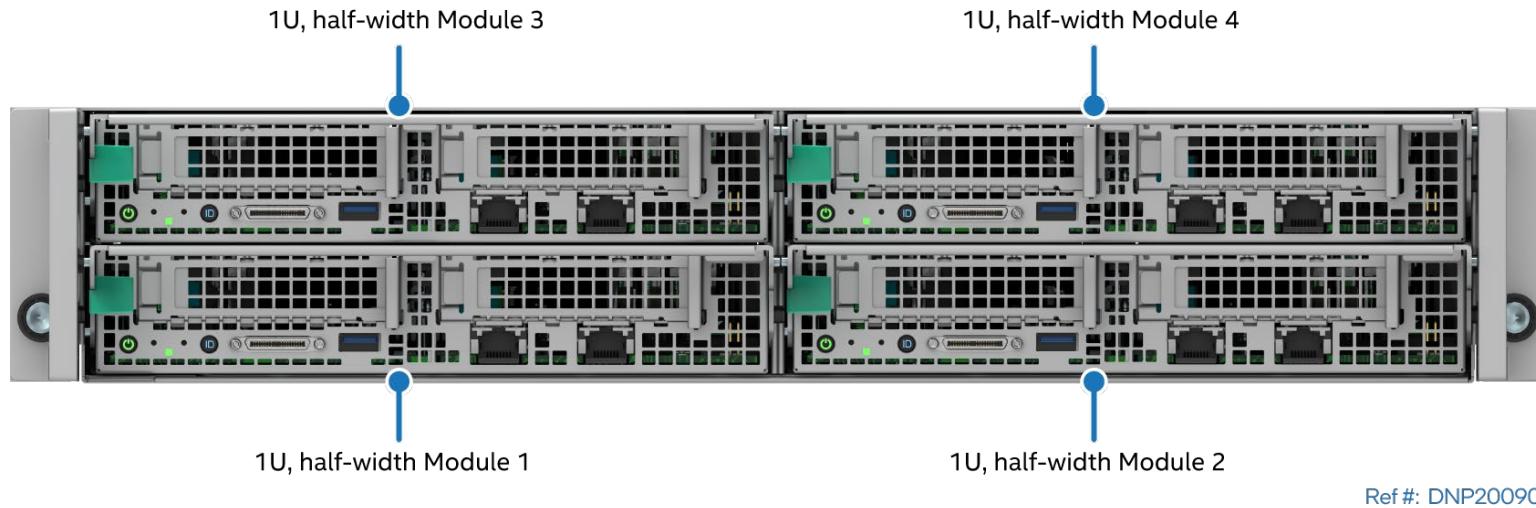


Figure 20. Module Identification for Four Half-Width Module System Configuration
Chassis iPCs FC2HLC30W0 and FC2HAC27W0

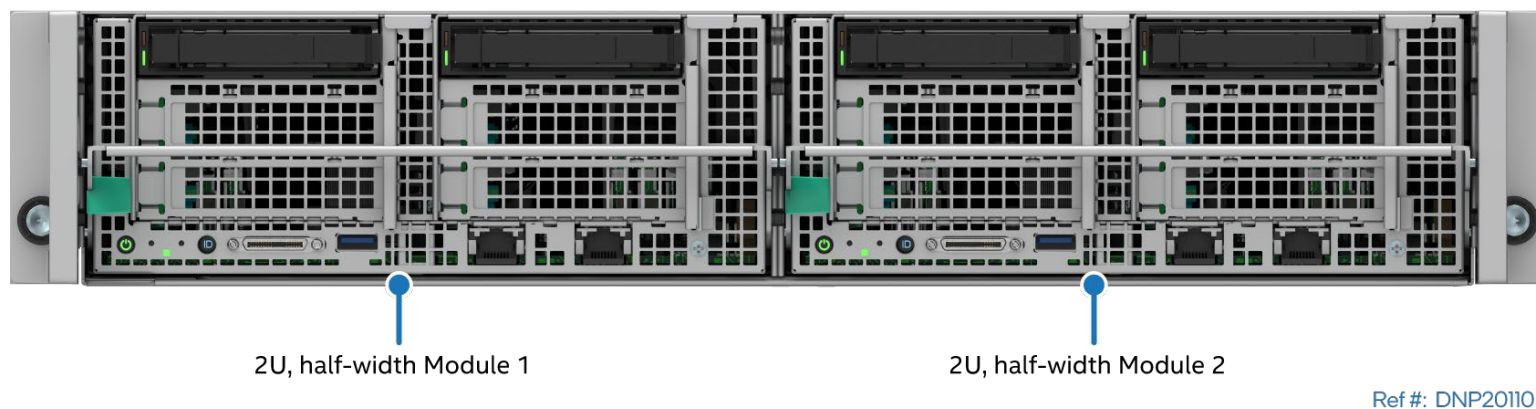


Figure 21. Module Identification for Two Half-Width Module System Configuration
Chassis iPC FC2HAC27W0

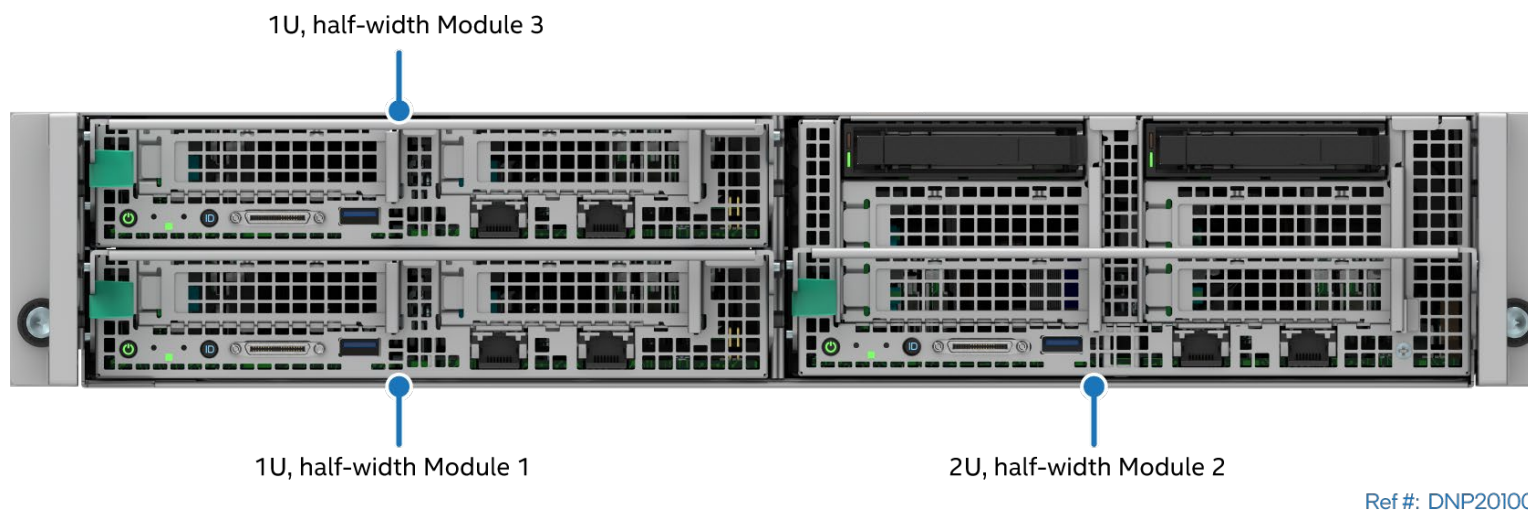


Figure 22. Module Identification for Three Half-Width Module System Configuration
Chassis iPC FC2HAC27W0

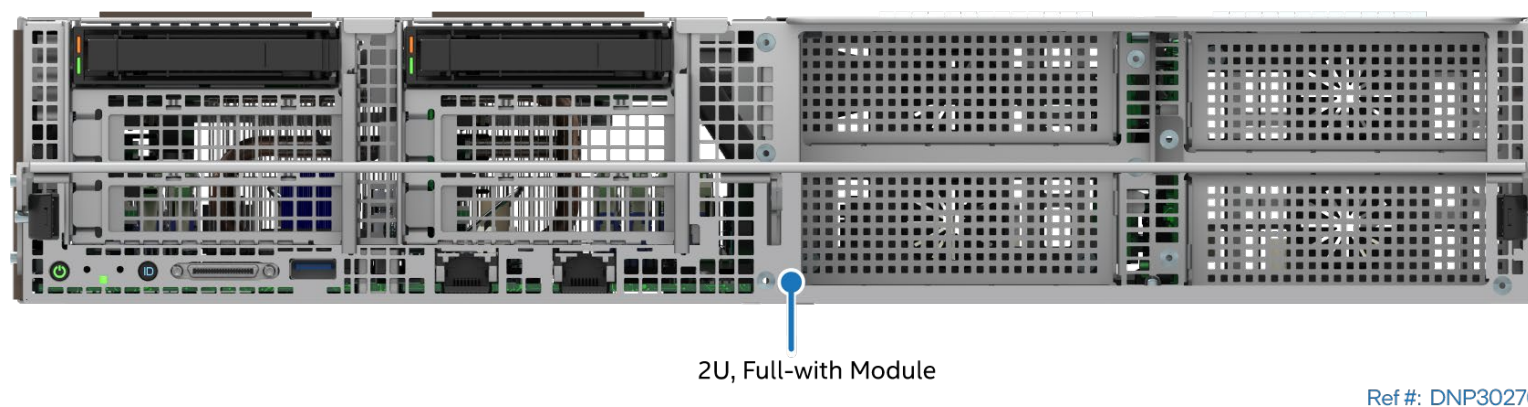
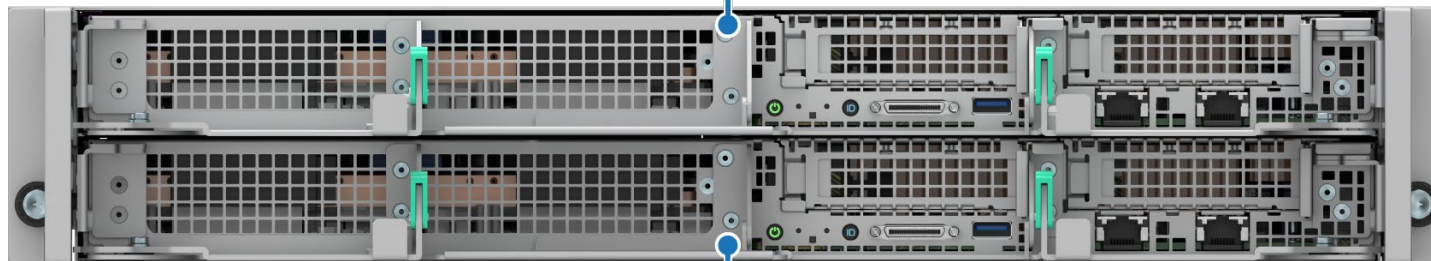


Figure 23. Module Identification for One Full-Width Module System Configuration
Chassis iPC FC2FAC27W0

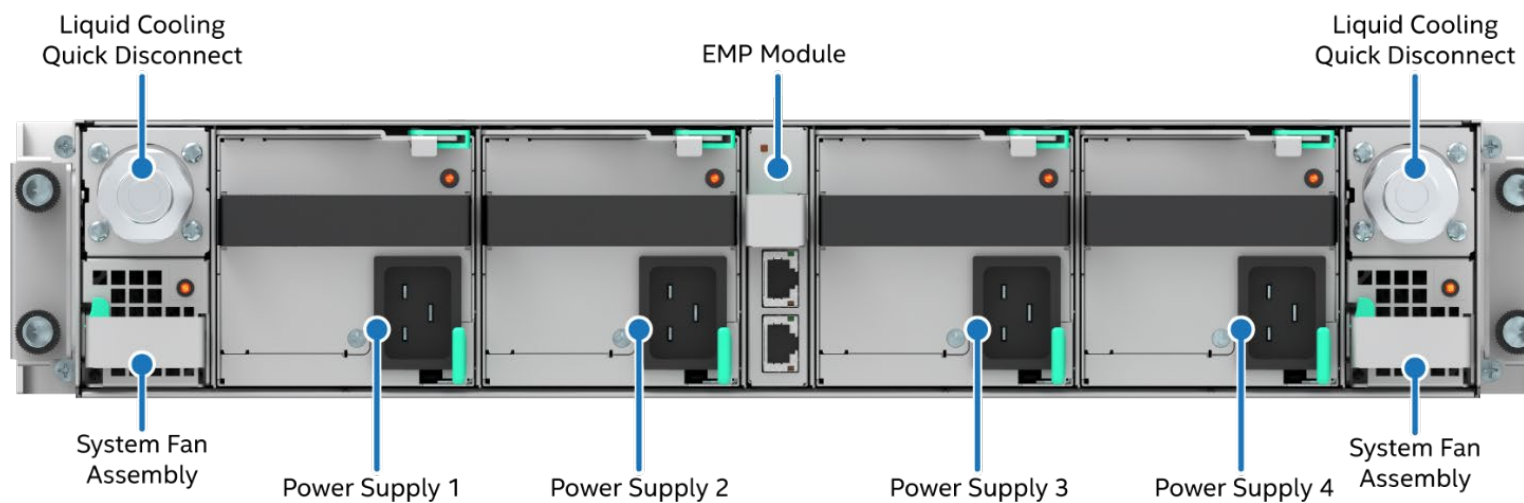
1U, full-width Module 2



1U, full-width Module 1

Ref #: DNP30571

**Figure 24. Module Identification for Two Full-Width Module System Configuration
Chassis iPC FC2FLC30W0**



Ref #: DNP20053

Figure 25 Liquid-Cooled System Back View

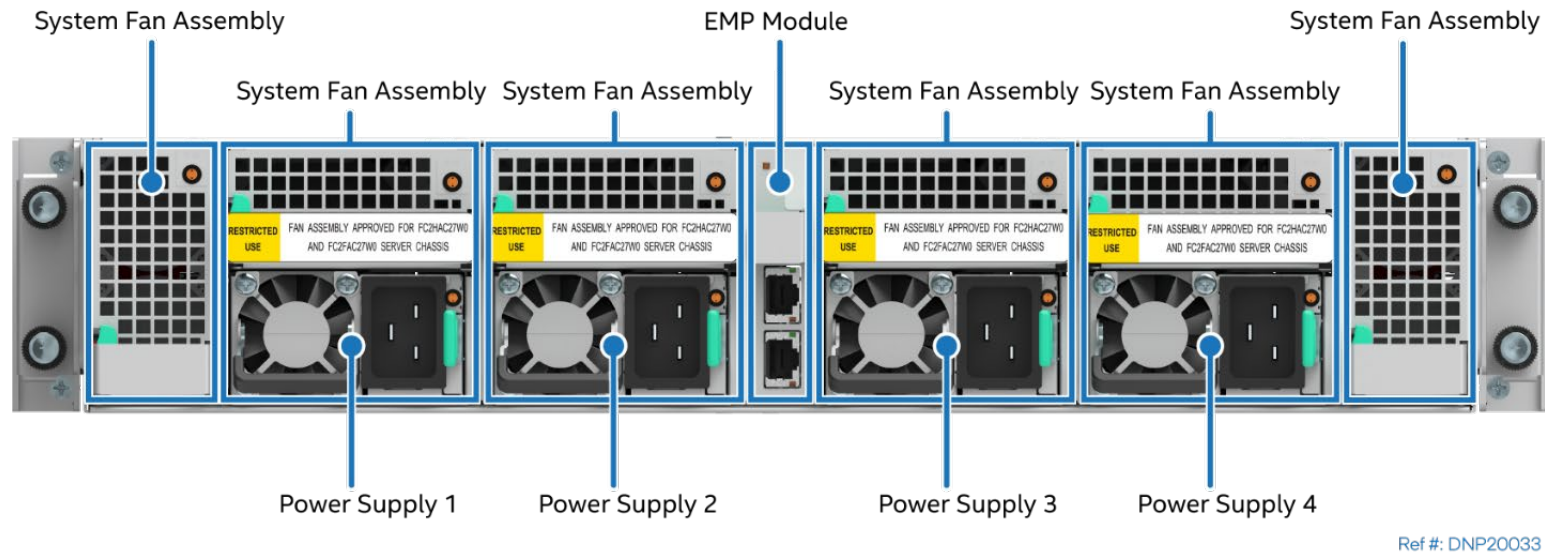


Figure 26. Air-Cooled System Back View

1.7 Reference Documents and Support Collaterals

For additional information, see the product support collaterals in the following table.

Table 7. Intel® Server D50DNP Family Reference Documents and Support Collaterals

Topic	Document Title or Support Collateral	Document Classification
Technical information about this product family	<i>Intel® Server D50DNP Family Technical Product Specification.</i>	Public
System integration instructions and service guidance	<i>Intel® Server D50DNP Family Integration and Service Guide.</i>	Public
Server configuration guidance and compatibility	<i>Intel® Server D50DNP Family Configuration Guide.</i>	Public
BMC technical information of product family	<i>Integrated Baseboard Management Controller Firmware External Product Specification (EPS). Document ID: 682839</i>	Intel Confidential
Information about the Integrated BMC Web Console	<i>Integrated Baseboard Management Controller Web Console (Integrated BMC Web Console) User Guide.</i>	Public
BIOS technical information of product family	<i>4th Gen Intel® Xeon® Scalable Processor Family BIOS Firmware External Product Specification.</i>	Intel Confidential
BIOS setup utility information of product family	<i>Intel® Server Board D50DNP and M50FCP Family BIOS Setup Utility User Guide.</i>	Public
Base specifications for the IPMI architecture and interfaces	<i>Intelligent Platform Management Interface Specification Second Generation v2.0</i>	Public
Specifications for PCIe* interfaces	<i>PCIe Base Specification, Revision 3.0, Revision 4.0, Revision 5.0</i>	Public

Intel® Server D50DNP Family Configuration Guide

Topic	Document Title or Support Collateral	Document Classification
TPM for PC Client specifications	<i>TPM PC Client Specifications, Revision 2.0</i>	Public
Specifications of 4 th Gen Intel® Xeon® Scalable processor family	<i>Sapphire Rapids External Design Specification (EDS): Document IDs: 630161, 612246, 612172, 633350, 611488</i>	Intel Confidential
Specifications of 5 th Gen Intel® Xeon® Scalable processor family	<i>Emerald Rapids External Design Specification(EDS): Document IDs: 721175,723370</i>	Intel Confidential
Processor design specifications and recommendations	<i>Eagle Stream Server and Fishhawk Falls Workstation Platforms Thermal Mechanical Specification (TMS): Document ID: 609847</i>	Intel Confidential
BIOS and BMC Security Best Practices	<i>Intel® Server Systems Baseboard Management Controller (BMC) and BIOS Security Best Practices White Paper</i>	Public
Managing an Intel® Server Overview	<i>Managing an Intel® Server System 2020</i>	Public
Latest system software updates: BIOS and Firmware	<i>Intel® System Update Package (SUP) for Intel® Server D50DNP Family.</i>	Public
System update utility	<i>Intel® Server Firmware Update Utility and User Guide</i>	Public
To obtain full system information	<i>Intel® Server Information Retrieval Utility and User Guide</i>	Public
To configure, save, and restore various system options	<i>Intel® Server Configuration Utility and User Guide</i>	Public
Product Warranty Information	<i>Warranty Terms and Conditions</i>	Public
Intel® Data Center Manager (Intel® DCM) information	<i>Intel® Data Center Manager (Intel® DCM) Product Brief</i>	Public
	Intel® Data Center Manager (Intel® DCM) Console User Guide	Public

Note: Intel Confidential documents are made available under a nondisclosure agreement (NDA) with Intel and must be ordered through your local Intel representative.

2. Server Building Block Options

Server building blocks are offered to provide the option of choosing from available Intel® Server D50DNP Family components to create a custom system configuration from the chassis up. Each building block component and optional accessory is purchased separately and assembled by a system integrator. At a minimum, a base functional system using building blocks requires the following:

- Liquid or air cooled 2U Intel® Server Chassis from the FC2000 chassis family
- Up to four 1U or up to two 2U modules from the Intel® D50DNP Module options (see [Table 5](#) for details)
- Two processors per module
- Memory
- Storage devices
- Liquid-cooling kit (required for liquid-cooled Intel® D50DNP Modules only)

Note: Mixing liquid-cooled modules with air-cooled modules in a single system is not supported.

For mixed module configurations, the customer must consider the lowest ambient temperature required by the installed processors in the modules. The module requiring the lowest ambient temperature will define the ambient requirements for the whole system even if other installed modules allow higher ambient temperature.

Optional Intel accessories include the following:

- I/O breakout cable with support for serial port, video port, and USB 2.0 ports
- Advanced System Management Key to enable advanced system management features on Integrated BMC Web Console.
- Intel® Virtual RAID on CPU (Intel® VROC) activation key for use with NVMe* SSDs
- Intel® Trusted Platform Module (TPM) 2.0
- M.2 SSD cooling kit
- Accelerator add-in card specific kit with metal bracket and power cable (required for accelerator module D50DNP2MFALAC only)
- Liquid-cooled voltage regulator thermal interface material compound and application tools (required for liquid-cooled Intel® D50DNP Modules only)

See [Chapter 3](#) for available accessory options.

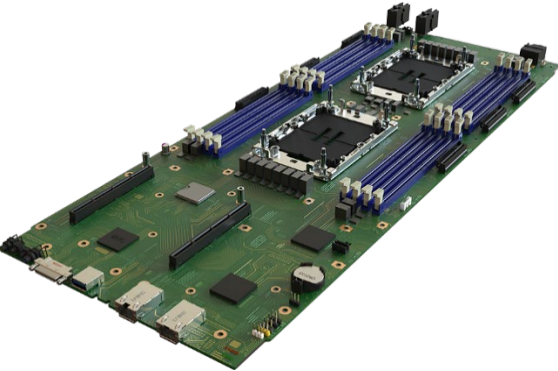
2.1 Intel® Server Board D50DNP Options

The product tables in this section provide order code information and detailed descriptions of the board option. The parts listed as included are ship along components in the product BOM.

For optional accessories, see [Chapter 3](#).

Note: Items identified with an iPC (Intel product code) are orderable building block options, accessories, or spare FRUs. In an effort to provide the complete product bill of materials, the ship along components list in each product table includes items identified by description and by iPN (Intel part number). The iPN information is provided for reference only. These components are not orderable as spares or accessories.

Table 8. Intel® Server Board D50DNP1SB Specifications

Intel® Server Board D50DNP1SB Intel® Server Board D50DNP		
	Order Information	Product Information
	iPC D50DNP1SB MM# 99ARWL UPC 735858532273 EAN 5032037263856 MOQ 1	Product type Server board only product or spare FRU Form factor Half-Width Packaged gross wt. 3.23 kg Un-packaged net wt. 1.88 kg Dimensions 566.34 x 211.58 x 2.23 mm (L x W x H)
Included	Required Items (sold separately) for board purchased as building block	Optional Accessories (sold separately) for board purchased as building block
(16) DIMM slots with support for standard DDR5 memory modules (6) Mini Cool Edge IO (MCIO*) connectors with x16 PCIe* 5.0 lanes (2) XCC processor carrier clip, for 4 th & 5 th Gen Intel® Xeon® Scalable processor family – iPC AXXSPRXCCCC (2) HBM processor carrier clip, for Intel® Xeon® CPU Max Series processor family – iPC AXXSPRHBMCC (2) MCC processor carrier clip, for 4 th Gen Intel® Xeon® Scalable processor family – iPC AXXSPRMCCCC See Table 4 for the complete board feature set.	(2) 4 th or 5 th Gen Intel® Xeon® Scalable family or Intel® Xeon® CPU Max Series processors See Section 1.2 for supported processors. Up to (16) ECC DDR5 SDRAM DIMMs See Section 1.3 for supported memory.	(1) Advanced System Management Key to enable advanced system management features on Integrated BMC Web Console – iPC ADVSYSMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of the two TPM iPCs above can be chosen. See Chapter 3 for all available accessory options.

2.2 Intel® D50DNP Module Options

The product tables found in this section provide order code information and detailed descriptions for each available module building block. The sections of each table identify:

- **Included** – The ship along components of the specified module product code (product BOM).
- **Required items** – Hardware required to be installed to the base system to achieve basic functionality using the default system feature set. Required items are sold separately.
- **Optional accessories** – Some of the available accessories that can be installed to enhance the basic feature set of the server board/chassis. Optional accessories are sold separately. Additional accessories are listed in [Chapter 3](#).

Note: Items identified with an iPC (Intel product code) are orderable building block options, accessories, or spare FRUs. In an effort to provide the complete product bill of materials, the ship along components list in each product table include items identified by description and by iPN (Intel part number). The iPN information is provided for reference only. These components are not orderable as spares or accessories.

Table 9. Compute Module D50DNP1MHCPAC Specifications

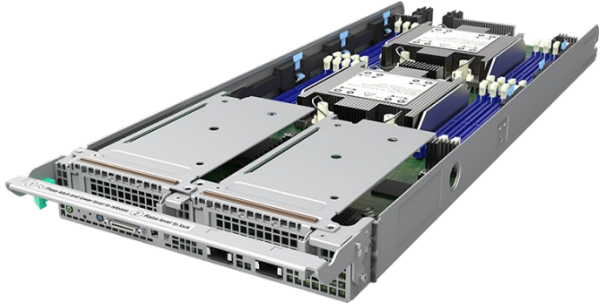
Compute Module D50DNP1MHCPAC Compute Module 1U Half-Width Air-Cooled		
	Order Information iPC D50DNP1MHCPAC MM# 99ARWP UPC 735858532280 EAN 5032037263863 MOQ 1	Product Information Product type L6 Compute module building block or spare FRU Form factor Density-optimized 1U Packaged gross wt. 5.79 kg Un-packaged net wt. 4.21 kg Dimensions 591.4 x 216 x 40.6 mm (L x W x H)
Included	Required Items (sold separately) for module purchased as building block	Optional Accessories (sold separately) for module purchased as building block
(1) Intel® Server Board D50DNP1SB – iPC D50DNP1SB (1) 1U half-width module tray – iPN M44835-xxx (1) 1U compute module air duct – iPN M44897-xxx (2) 1U riser bracket to support riser cards DNP1URISER and DNP1UMRISER – iPN M44890-xxx (1) 1U low-profile PCIe* standard riser card – iPC DNP1URISER (1) 1U low-profile PCIe MCIO* riser card – iPC DNP1UMRISER (1) MCIO cable for 1U left riser – iPN M40563-xxx (1) 1U air-cooled heat sink front – iPC DNP1UHSF (1) 1U air-cooled heat sink back – iPC DNP1UHSB	(2) 4 th or 5 th Gen Intel® Xeon® Scalable family processors See Section 1.2 for supported processors. Up to (16) ECC DDR5 SDRAM DIMMs Order number of DIMM Blank kits (iPC DNPDMMBLNK) to populate DIMM slots not occupied by memory DIMMs. Each DIMM Blank kit contains 4 DIMM Blanks See Section 1.3 for supported memory. (1) one heat sink kit for each air-cooled M.2 SSD – iPC DNPM2HS	(1) I/O breakout cable – iPC AXXCONNTDBG (1) Advanced System Management Key to enable advanced system management features on Integrated BMC Web Console – iPC ADVSYSMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of the two TPM iPCs above can be chosen. See Chapter 3 for all available accessory options.

Table 10. Compute Module D50DNP1MHEVAC Specifications

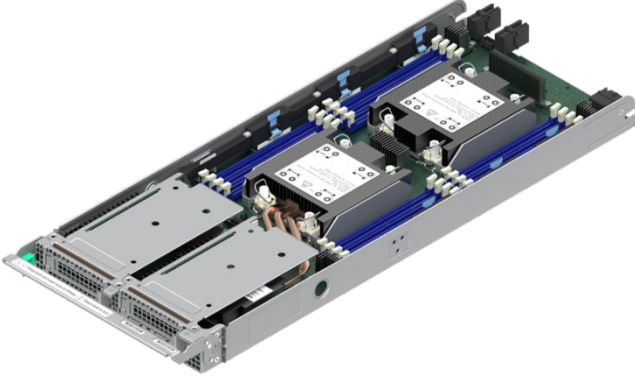
Compute Module D50DNP1MHEVAC Compute Module 1U Half-Width EVAC Air-Cooled		
	Order Information iPC D50DNP1MHEVAC MM# 99ARWR UPC 735858532297 EAN 5032037263870 MOQ 1	Product Information Product type L6 Compute module building block or spare FRU Form factor Density-optimized 1U Packaged gross wt. 6.08 kg Un-packaged net wt. 4.5 kg Dimensions 591.4 x 216 x 40.6 mm (L x W x H)
Included	Required Items (sold separately) for module purchased as building block	Optional Accessories (sold separately) for module purchased as building block
(1) Intel® Server Board D50DNP1SB – iPC D50DNP1SB (1) 1U half-width module tray – iPN M44835-xxx (1) 1U compute module air duct – iPN M44897-xxx (2) 1U riser bracket to support riser cards DNP1URISER and DNP1UMRISER – iPN M44890-xxx (1) 1U low-profile PCIe* MCIO* riser card – iPC DNP1UMRISER (1) MCIO cable for 1U left riser – iPN M40563-xxx (1) 1U air-cooled EVAC heat sink – iPC DNPEVACHS (1) 1U air-cooled heat sink back – iPC DNP1UHSB	(2) 4 th or 5 th Gen Intel® Xeon® Scalable family processors See Section 1.2 for supported processors. Up to (16) ECC DDR5 SDRAM DIMMs Order number of DIMM Blank kits (iPC DNPDMMBLNK) to populate DIMM slots not occupied by memory DIMMs. Each DIMM Blank kit contains 4 DIMM Blanks See Section 1.3 for supported memory. (1) one heat sink kit for each air-cooled M.2 SSD – iPC DNPM2HS	(1) I/O breakout cable – iPC AXXCONNTDBG (1) Advanced System Management Key to enable advanced system management features on Integrated BMC Web Console – iPC ADVSYSMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of the two TPM iPCs above can be chosen. See Chapter 3 for all available accessory options.

Table 11. Compute Module D50DNP1MHCPLC Specifications

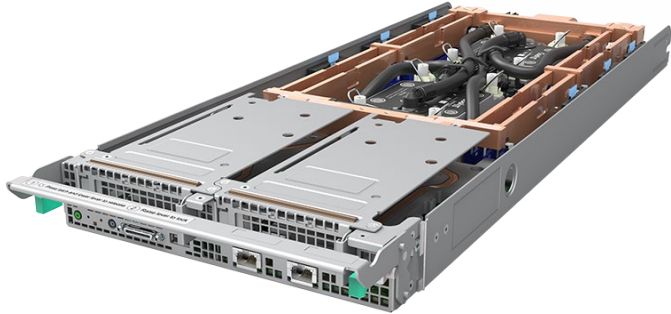
Compute Module D50DNP1MHCPLC Compute Module 1U Half-Width Liquid-Cooled		
	Order Information iPC D50DNP1MHCPLC MM# 99ARWT UPC 735858532303 EAN 5032037263887 MOQ 1	Product Information Product type L6 compute module building block or spare FRU Form factor Density-optimized 1U Packaged gross wt. 9.8 kg Un-packaged net wt. 7.5 kg Dimensions 591.4 x 216 x 40.6 mm (L x W x H)
Included	Required Items (sold separately) for module purchased as building block	Optional Accessories (sold separately) for module purchased as building block
(1) Intel® Server Board D50DNP1SB – iPC D50DNP1SB (1) 1U half-width liquid-cooled module tray – iPN M60276-xxx (2) 1U riser bracket to support riser cards DNP1URISER and DNP1UMRISER – iPN M44890-xxx (1) 1U low-profile PCIe* standard riser card – iPC DNP1URISER (1) 1U low-profile PCIe MCIO* riser card – iPC DNP1UMRISER (1) MCIO cable for 1U left riser – iPN M40563-xxx (1) D50DNP compute module liquid-cooling loop – iPC DNPLCLPCM	(2) 4 th or 5 th Gen Intel® Xeon® Scalable family or Intel® Xeon® CPU Max Series processors. See Section 1.2 for supported processors. (16) ECC DDR5 SDRAM DIMMs. See Section 1.3 for supported memory. (1) M.2 heat sink liquid-cooled for each liquid-cooled M.2 SSD – iPC DNPM2LCHS	(1) I/O breakout cable – iPC AXXCONNTDBG (1) Advanced System Management Key to enable advanced system management features on Integrated BMC Web Console – iPC ADVSYSTEMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of the two TPM iPCs above can be chosen. (1) Liquid-cooling VR TIM application tools – iPC TNPLCVRTLS (1) Liquid-cooling VR TIM application nozzle – iPC TNPLCVRTNZ (1) Liquid-cooling VR TIM compound – iPC TNPLCVRCMPD TNPLCVRTLS, TNPLCVRTNZ, and TNPLCVRCMPD are to be used for installation or replacement of D50DNP compute module liquid-cooling loop. See the <i>Intel® Server D50DNP Family Integration and Service Guide</i> for usage instructions. See Chapter 3 for all available accessory options.

Table 12. Management Module D50DNP2MHSVAC Specifications

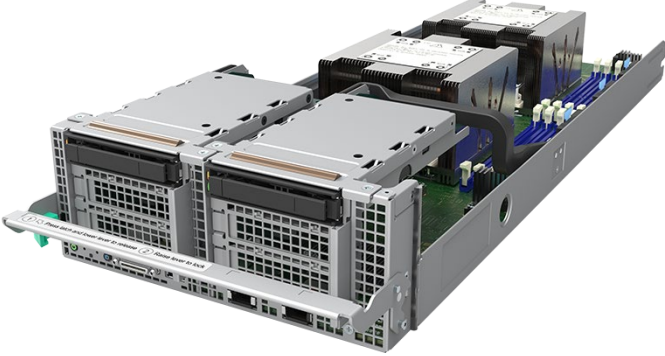
Management Module D50DNP2MHSVAC Management Module 2U Half-Width Air-Cooled		
	Order Information iPC D50DNP2MHSVAC MM# 99ARWV UPC 735858532310 EAN 5032037263894 MOQ 1	Product Information Product type L6 management module building block or spare FRU Form factor Density-optimized 2U Packaged gross wt. 6.81 kg Un-packaged net wt. 4.73 kg Dimensions 591.4 x 216 x 81.9 mm (L x W x H)
Included (1) Intel® Server Board D50DNP1SB – iPC D50DNP1SB (1) 2U half-width module tray – iPN M44836-xxx (1) 2U management module air duct – iPN M44894-xxx (1) MCIO* cable for 2U right riser – iPN M40564-xxx (1) MCIO cable for 2U left riser – iPN M40565-xxx (2) 2U riser bracket to support riser card DNP2UMRISER – iPN M44892-xxx (2) 2U low-profile PCIe* MCIO riser card – iPC DNP2UMRISER (2) U.2 PCIe NVMe* SSD adapter card – iPN K50874-xxx (2) 2.5" tool-less SSD drive carrier – iPN J36439-xxx (1) 2U air-cooled heat sink front – iPC DNP2UHSF (1) 2U air-cooled heat sink back – iPC DNP2UHSB	Required Items (sold separately) for module purchased as building block (2) 4 th or 5 th Gen Intel® Xeon® Scalable family or Intel® Xeon® CPU Max Series processors. See Section 1.2 for supported processors. Up to (16) ECC DDR5 SDRAM DIMMs. See Section 1.3 for supported memory. Order number of DIMM Blank kits (iPC DNPDMMBLNK) to populate DIMM slots not occupied by memory DIMMs. Each DIMM Blank kit contains 4 DIMM Blanks	Optional Accessories (sold separately) for module purchased as building block (1) I/O breakout cable – iPC AXXCONNTDBG (1) Advanced System Management Key to enable advanced system management features on Integrated BMC Web Console – iPC ADVSYSMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of the two TPM iPCs above can be chosen. (1) one heat sink kit for each air-cooled M.2 SSD – iPC DNPM2HS See Chapter 3 for all available accessory options.

Table 13. Intel® Data Center GPU Max Series Accelerator Module D50DNP1MFALLC Specifications

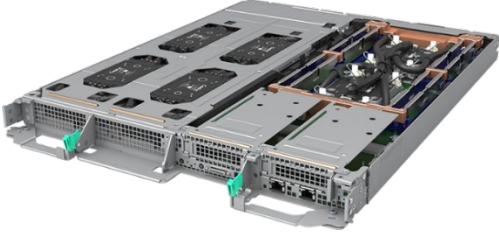
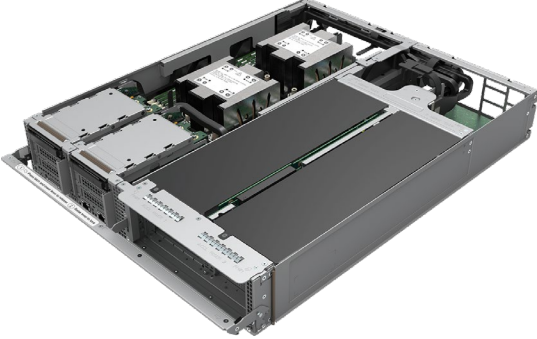
Intel® Data Center GPU Max Series D50DNP1MFALLC Intel® Data Center GPU Max Series Accelerator Module 1U Full-Width Liquid-Cooled		
	Order Information	Product Information
	iPC D50DNP1MFALLC MM# 99ARWW UPC 735858532327 EAN 5032037263900 MOQ 1	Product type Spare FRU only Form factor Density-optimized 1U Packaged gross wt. 19.06 kg Un-packaged net wt. 14.23 kg Dimensions 597.7 x 437.1 x 40.6 mm (L x W x H)
Included	Required Items (sold separately) for module purchased as building block	Optional Accessories (sold separately) for module purchased as building block
(1) Intel® Server Board D50DNP1SB – iPC D50DNP1SB (1) Intel® Data Center GPU Max Series carrier baseboard (CBB) – iPC DNPLCPVCCBB (1) 1U full-width liquid-cooled module tray – iPN M62560 -xxx (1) MCIO* cable from carrier baseboard to server board P1_PE0 connector – iPN M82302 -xxx (1) MCIO cable from carrier baseboard to server board P0_PE2 connector – iPN M82304 -xxx (1) MCIO cable from carrier baseboard to server board P0_PE1 connector – iPN M82313 -xxx (1) MCIO cable from carrier baseboard to server board P1_PE3 connector – iPN M82316 -xxx (1) Signal cable to connect carrier baseboard to server board J_MISC connector – iPN M82334 -xxx (2) 1U riser bracket to support riser cards DNP1URISER and DNP1UMRISER – iPN M44890 -xxx (1) 1U low-profile PCIe* standard riser card – iPC DNP1URISER (1) 1U low-profile PCIe MCIO riser card – iPC DNP1UMRISER (1) MCIO cable for 1U left riser – iPN M40563 -xxx (1) D50DNP compute module liquid-cooling loop – iPC DNPLCLPCM (1) D50DNP accelerator module liquid-cooling loop – iPC DNPLCLPAM (1) Power cable to connect 12 V to 48 V converter board to carrier baseboard – iPN M52679 -xxx (1) Power cable to connect 12 V to 48 V converter board to carrier baseboard – iPN M52680 -xxx (1) Signal cable to connect the top and bottom sides of power distribution board converter – iPN M82332 -xxx	(2) 4 th or 5 th Gen Intel® Xeon® Scalable family or Intel® Xeon® CPU Max Series processors. See Section 1.2 for supported processors. (16) ECC DDR5 SDRAM DIMMs. See Section 1.3 for supported memory. (1) M.2 heat sink liquid-cooled for each liquid-cooled M.2 SSD – iPC DNPM2LCHS	(1) I/O breakout cable – iPC AXXCONNTDBG (1) Advanced System Management Key to enable advance system management features on Integrated BMC Web Console. – iPC ADVSYSMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of two TPM iPCs above can be chosen. (1) Liquid-cooling VR TIM application tools – iPC TNPLCVRTLS (1) Liquid-cooling VR TIM application nozzle – iPC TNPLCVRTNZ (1) Liquid-cooling VR TIM compound – iPC TNPLCVRCMPD TNPLCVRTLS, TNPLCVRTNZ, and TNPLCVRCMPD are to be used for installation or replacement of D50DNP compute module liquid-cooling loop. See the <i>Intel® Server D50DNP Family Integration and Service Guide</i> for usage instructions. See Chapter 3 for all available accessory options.

Table 14. PCIe* Accelerator Module D50DNP2MFALAC Specifications

PCIe Accelerator Module D50DNP2MFALAC PCIe Accelerator Module 2U Full-Width Air-Cooled		
	Order Information iPC D50DNP2MFALAC MM# 99ARWX UPC 735858532334 EAN 5032037263917 MOQ 1	Product Information Product type L6 accelerator module building block or spare FRU Form factor Density-optimized 2U Packaged gross wt. 13.95 kg Un-packaged net wt. 10.25 kg Dimensions 591.25 x 437.1 x 82.1 mm (L x W x H)
Included (1) Intel® Server Board D50DNP1SB – iPC D50DNP1SB (1) 2U half-width module tray – iPN M44884-xxx (1) 2U PCIe accelerator module air duct – iPN M44898-xxx (1) MCIO* cable from 2U riser card to server board P1_PE2 – iPN M44308-xxx (1) MCIO cable from 2U riser card to server board P1_PE4 – iPN M44307-xxx (1) MCIO cable from accelerator riser 1 connector J_MCIO_2 to server board P0_PE1 connector – iPN M44299-xxx (1) MCIO cable from accelerator riser 1 connector J_MCIO_1 to server board P0_PE2 connector – iPN M44300-xxx (1) MCIO cable from accelerator riser 2 connector J_MCIO_4 to server board P1_PE3 connector – iPN M44305-xxx (1) MCIO cable from accelerator riser 2 connector J_MCIO_3 to server board P1_PE0 connector – iPN M44306-xxx (2) 2U riser bracket to support riser card DNP2UMRISER – iPN M44892-xxx (2) 2U low-profile PCIe MCIO riser card – iPC DNP2UMRISER (2) U.2 PCIe NVMe* SSD adapter card – iPN K50874-xxx (2) 2.5" tool-less SSD drive carrier – iPN J36439-xxx (1) 2U air-cooled heat sink front – iPC DNP2UHSF (1) 2U air-cooled heat sink back – iPC DNP2UHSB (1) 2U PCIe accelerator riser card 1 – iPC DNPACCLRISER1 (1) 2U PCIe accelerator riser card 2 – iPC DNPACCLRISER2 (1) Accelerator module power connector board – iPC DNPACCLNBRD	Required Items (sold separately) for module purchased as building block (2) 4 th or 5 th Gen Intel® Xeon® Scalable family or Intel® Xeon® CPU Max Series processors. See Section 1.2 for supported processors. Up to (16) ECC DDR5 SDRAM DIMMs. See Section 1.3 for supported memory. Order number of DIMM Blank kits (iPC DNPDMMBLKN) to populate DIMM slots not occupied by memory DIMMs. Each DIMM Blank kit contains 4 DIMM Blanks	Optional Accessories (sold separately) for module purchased as building block (1) I/O breakout cable – iPC AXXCONNTDBG (1) Advanced System Management Key to enable advance system management features on Integrated BMC Web Console – iPC ADVSYSMGMTKEY (1) Intel® Virtual RAID on CPU (Intel® VROC) Standard Key – iPC VROCSTANKEY (1) Intel® Trusted Platform Module (TPM) 2.0 – iPC AXXTPMENC9 (1) Intel® Trusted Platform Module (TPM) 2.0 China version – iPC AXXTPMCHNE8 Note: One of the two TPM iPCs above can be chosen. (1) one heat sink kit for each air-cooled M.2 SSD – iPC DNPM2HS (1) Accelerator Module card kit A100 – iPC TNPACCLBZA100 (1) Accelerator Module card kit DC – iPC TNPACCLBZDC (1) Accelerator Module card kit PVC – iPC DNPACCLBZPVC (1) Accelerator Module card kit E810 – iPC DNPACCLBZ810A Note: Each accelerator add-in card requires matching accelerator card kit. Note: Accelerator module D50DNP2MFALAC supports up to four accelerator add-in cards of the same type. Mixed types in a single module are not supported. See the <i>Intel® Server D50DNP Family Technical Product Specification</i> for detailed information on the support for accelerator add-in cards. See Chapter 3 for all available accessory options.

PCIe Accelerator Module D50DNP2MFALAC PCIe Accelerator Module 2U Full-Width Air-Cooled		
Included	Required Items (sold separately) for chassis purchased as building block	Optional Accessories (sold separately) for chassis purchased as building block
(2) Power cable to connect DNPACCLRISER1 and DNPACCLRISER 2 to DNPACCLNBRD – iPN M44103 -xxx (1) Signal cable to connect DNPACCLNBRD to server board J_APB connector – iPN M44104 -xxx		

2.3 Intel® Server Chassis FC2000 Options

The product tables found in this section provide order code information and detailed descriptions for each available chassis option. The parts listed as included are ship along components in the product BOM.

Note: Items identified with an iPC (Intel product code) are orderable building block options, accessories, or spare FRUs. In an effort to provide the complete product bill of materials, the ship along components list in each product table include items identified by description and by iPN (Intel part number). The iPN information is provided for reference only. These components are not orderable as spares or accessories.

Table 15. Intel® Server Chassis FC2HAC27W0 Specifications


Intel® Server Chassis FC2HAC27W0 Intel® Server Chassis FC2000 v2 Half-Width Configuration Air-Cooled No PSUs		
	Order Information iPC FC2HAC27W0 MM# 99ARXW UPC 735858532341 EAN 5032037263924 MOQ 1	Product Information Product type Chassis building block for Intel® Server System D50DNP or spare FRU Chassis form factor 2U rack mount Packaged gross wt. 39.42 kg Un-packaged net wt. 27.42 kg Chassis dimensions 865 x 441.8 x 86.8 mm (L x W x H) Package dimensions 1192 x 758 x 317 mm (L x W x H)
Included	Required Items (sold separately) for chassis purchased as building block	Optional Accessories (sold separately) for chassis purchased as building block
(1) 2U chassis FC2000 (4) Air-cooled fan assembly with integrated dual rotor 60mm fan – iPC FCXX60MMACFAN (2) Air-cooled fan assembly with integrated dual rotor 40mm fan – iPC FCXX40MMACFAN (1) Power distribution board assembly – iPC FCXXPDBASSMBL2 (1) Tool less rack rail mount kit – iPC FCXXRAILKIT (4) Internal rail kit – iPC FCXX1USPPRT (1) EMP module filler	Intel® D50DNP Modules See Section 1.6 for Intel® D50DNP Modules supported by this chassis. Each chassis slot not occupied by a module must be filled with 1U module blank – iPC AXXFC1UHWBLANK From (2) and up to (4) 2700 W power supply units – iPC FCXX27CRPSAC Each PSU slot not occupied by a PSU must be filled with PSU blank – iPC FCXXBLANKAC	(1) Ethernet Management Port Module – iPC AXXFCEMP See Chapter 3 for all available accessory options. Note about power supply units: See the <i>Intel® Server D50DNP Family Technical Product Specification</i> and Intel® Power Calculator Tool https://servertools.intel.com/tools/power-calculator/ to determine the quantity of power supply units based on specific configuration and workload.

Table 16. Intel® Server Chassis FC2FAC27W0 Specifications


Intel® Server Chassis FC2FAC27W0 Intel® Server Chassis FC2000 v2 Full-Width Configuration Air-Cooled No PSUs		
	Order Information iPC FC2FAC27W0 MM# 99ARXZ UPC 735858532358 EAN 5032037263931 MOQ 1	Product Information Product type Chassis building block for Intel® Server System D50DNP or spare FRU Chassis form factor 2U rack mount Packaged gross wt. 38.26 kg Un-packaged net wt. 26.26 kg Chassis dimensions 865 x 441.8 x 86.8 mm (L x W x H) Package dimensions 1192 x 758 x 317 mm (L x W x H)
Included	Required Items (sold separately) for chassis purchased as building block	Optional Accessories (sold separately) for chassis purchased as building block
(1) 2U chassis FC2000 (4) Air-cooled fan assembly with integrated dual rotor 60mm fan – iPC FCXX60MMACFAN (2) Air-cooled fan assembly with integrated dual rotor 40mm fan – iPC FCXX40MMACFAN (1) Power distribution board assembly – iPC FCXXPDBASSMBL2 (1) Tool less rack rail mount kit – iPC FCXXRAILKIT (1) EMP module filler	Intel® D50DNP Modules See Section 1.6 for Intel® D50DNP Modules supported by this chassis. From (2) and up (4) 2700 W power supply units – iPC FCXX27CRPSAC Each PSU slot not occupied by a PSU must be filled with PSU blanks – iPC FCXXBLANKAC	(1) Ethernet management port module – iPC AXXFCEMP See Chapter 3 for all available accessory options. Note about power supply units: See the <i>Intel® Server D50DNP Family Technical Product Specification</i> and Intel® Power Calculator Tool https://servertools.intel.com/tools/power-calculator/ to determine the quantity of power supply units based on specific configuration and workload.

Table 17. Intel® Server Chassis FC2HLC30W0 Specifications



Intel® Server Chassis FC2HLC30W0 Intel® Server Chassis FC2000 v2 Half-Width Configuration Liquid-Cooled No PSUs		
	Order Information iPC FC2HLC30W0 MM# 99ARZ1 UPC 735858532365 EAN 5032037263948 MOQ 1	Product Information Product type Chassis building block for Intel® Server System D50DNP or spare FRU Chassis form factor 2U rack mount Packaged gross wt. 40.98 kg Un-packaged net wt. 28.98 kg Chassis dimensions 865 x 441.8 x 86.8 mm (L x W x H) Package dimensions 1192 x 758 x 317 mm (L x W x H)
Included	Required Items (sold separately) for chassis purchased as building block	Optional Accessories (sold separately) for chassis purchased as building block
(1) 2U chassis FC2000 (2) Liquid-cooled fan assembly with integrated dual rotor 40mm fan – iPC FCXX40MMLCFAN (1) Chassis plumbing assembly kit – iPC FCXXLCMDMFD (1) Power distribution board assembly – iPC FCXXPDBASSMBL2 (1) Tool less rack rail mount kit – iPC FCXXRAILKIT (4) Internal rail kit – iPC FCXX1USPPRT (1) EMP module filler	Intel® D50DNP Modules. See Section 1.6 for Intel® D50DNP Modules supported by this chassis. Each chassis slot not occupied by a module must be filled with 1U module blank – iPC AXXFC1UHWBLANK From (2) and up (4) 3000 W power supply units – iPC FCXX30CRPSLC Each PSU slot not occupied by a PSU must be filled with PSU blanks – iPC FCXXBLANKLC	(1) Ethernet management port module – iPC AXXFCEMP See Chapter 3 for all available accessory options. Note about power supply units: See the <i>Intel® Server D50DNP Family Technical Product Specification</i> and Intel® Power Calculator Tool https://servertools.intel.com/tools/power-calculator/ to determine the quantity of power supply units based on specific configuration and workload.

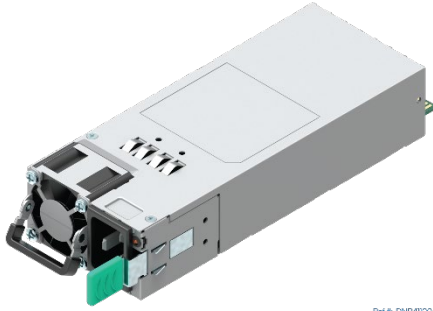

Table 18. Intel® Server Chassis FC2FLC30W0 Specifications

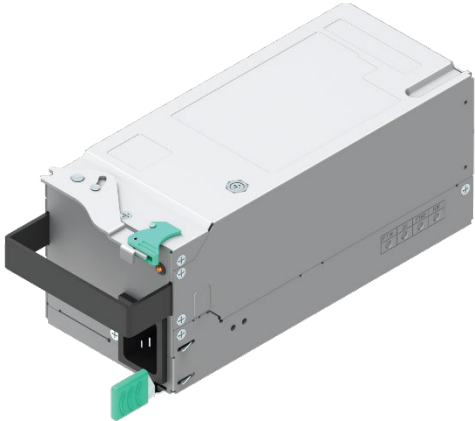
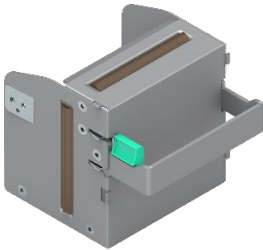
Intel® Server Chassis FC2FLC30W0 Intel® Server Chassis FC2000 v2 Full-Width Configuration Liquid-Cooled No PSUs		
	Order Information iPC FC2FLC30W0 MM# 99ARZ2 UPC 735858532372 EAN 5032037263955 MOQ 1	Product Information Product type Chassis building block for Intel® Server System D50DNP or spare FRU Chassis form factor 2U rack mount Packaged gross wt. 40.42 kg Un-packaged net wt. 28.38 kg Chassis dimensions 865 x 441.8 x 86.8 mm (L x W x H) Package dimensions 1192 x 758 x 317 mm (L x W x H)
Included	Required Items (sold separately) for chassis purchased as building block	Optional Accessories (sold separately) for chassis purchased as building block
((1) 2U chassis FC2000 (2) Liquid-cooled fan assembly with integrated dual rotor 40mm fan – iPC FCXX40MMLCFAN (1) Chassis plumbing assembly kit – iPC FCXXLCMDMFD (1) Power distribution board assembly – iPC FCXXPDBASSMBL2 (1) Tool less rack rail mount kit – iPC FCXXRAILKIT (4) Internal rail kit – iPC FCXX1USPPRT (1) EMP module filler	Intel® D50DNP Modules. See Section 1.6 for Intel® D50DNP Modules supported by this chassis. Each chassis slot not occupied by a module must be filled with 1U module blank – iPC AXXFC1UFWBLANK From (2) and up (4) 3000 W power supply units – iPC FCXX30CRPSLC Each PSU slot not occupied by a PSU must be filled with PSU blanks – iPC FCXXBLANKLC	(1) Ethernet management port module – iPC AXXFCEMP See Chapter 3 for all available accessory options. Note about power supply units: See the <i>Intel® Server D50DNP Family Technical Product Specification</i> and Intel® Power Calculator Tool https://servertools.intel.com/tools/power-calculator/ to determine the quantity of power supply units based on specific configuration and workload.


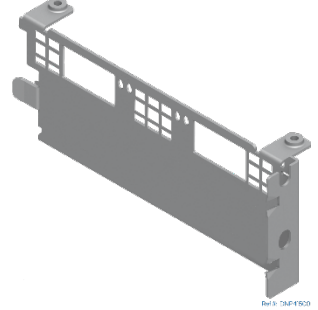
3. Accessory Options


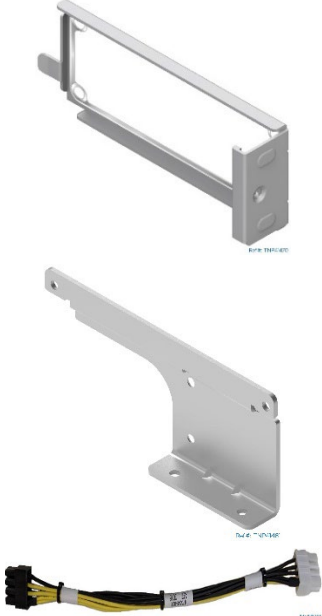
The following sections identify available accessory kits supported in the Intel® Server D50DNP Family.




Table 19. Miscellaneous Accessory Options

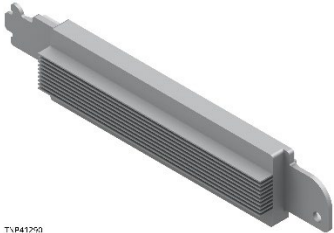
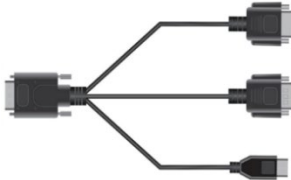
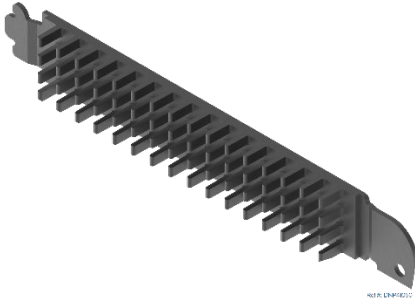
Description / Image	Order Information		Product Information
2700 W Power Supply Common Redundant Power Supply 	iPC MM# UPC EAN MOQ	FCXX27CRPSAC 99AZAM 735858532389 5032037263962 1	Product Type: Spare FRU Where Used: <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 Half-Width Configuration Air-Cooled Intel® Server Chassis FC2000 v2 Full-Width Configuration Air-Cooled Product Overview: 2700 W AC common redundant power supply, 80 Plus* Titanium efficiency. Kit Includes: (1) 2700 W power supply unit Minimum two power supply units per chassis are required. See the Intel® Server D50DNP Family technical product specification and Intel® Power Calculator Tool https://servertools.intel.com/tools/power-calculator/ to determine the quantity of power supply units based on specific configuration and workload.
Intel® Server Chassis FC2000 Blank Filler for Air-Cooled PSU 	iPC MM# UPC EAN MOQ	FCXXBLANKAC 99ARZ4 735858532396 5032037263979 1	Product Type: Spare FRU Where Used: <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 Half-Width Configuration Air-Cooled Intel® Server Chassis FC2000 v2 Full-Width Configuration Air-Cooled Product Overview: Intel® Server Chassis FC2000 Blank Filler for Air-Cooled PSU Kit Includes: (1) Intel® Server Chassis FC2000 Blank Filler for Air-Cooled PSU




Description / Image	Order Information	Product Information
<p>3000 W Power Supply, liquid-cooled Common Redundant Power Supply</p>  <p>Ref #: DNP41071</p>	<p>iPC FCXX30CRPSLC MM# 99ARZ3 UPC 735858524247 EAN 5032037256384 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 half-width configuration liquid-cooled Intel® Server Chassis FC2000 v2 full-width configuration liquid-cooled <p>Product Overview: 3000 W AC liquid-cooled common redundant power supply 80 Plus* Titanium efficiency. The power connector on 3000 W AC power supply follows the International Electrotechnical Commission (IEC) 320 C22 standard.</p> <p>Kit Includes: (1) 3000 W power supply unit, liquid-cooled</p> <p>Minimum two power supply units per chassis are required. See the Intel® Server D50DNP Family technical product specification and Intel® Power Calculator Tool https://servertools.intel.com/tools/power-calculator/ to determine the quantity of power supply units based on specific configuration and workload.</p>
<p>Intel® Server Chassis FC2000 Blank Filler for Liquid-Cooled PSU</p>  <p>Ref #: DNP41072</p>	<p>iPC FCXXBLANKLC MM# 99ARZ5 UPC 735858532402 EAN 5032037263986 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 half-width configuration liquid-cooled Intel® Server Chassis FC2000 v2 full-width configuration liquid-cooled <p>Product Overview: Intel® Server Chassis FC2000 Blank Filler for Liquid-Cooled PSU</p> <p>Kit Includes: (1) Intel® Server Chassis FC2000 Blank Filler for Liquid-Cooled PSU</p>

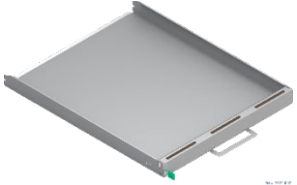

Description / Image	Order Information	Product Information
<p>PCIe* Accelerator Module Card Kit DC</p> 	<p> iPC TNPACCLBZDC MM# 99A2AR UPC 735858469425 EAN 5032037207997 MOQ 1 </p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U Full-Width Air-Cooled <p>Product Overview:</p> <p>Supports Programmable Acceleration Card with Intel® Stratix® 10 SX FPGA add-in card in PCIe accelerator module 2U full-width air-cooled. Each card kit can only support one Intel® Stratix® 10 SX FPGA accelerator add-in card. The kit must be ordered for each card.</p> <p>Kit Includes:</p> <p>(1) Front metal bracket – iPN K85872-xxx</p> <p>(1) Power cable – iPN K73545-xxx, used to connect the add-in card to the accelerator module connector board.</p> <p>(2) Screws M3 x 5.5 mm</p>
<p>PCIe Accelerator Module Card Kit E810</p> 	<p> iPC DNPACCLBZ810A MM# 99C212 UPC 735858532631 EAN 5032037264211 MOQ 1 </p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U Full-Width Air-Cooled <p>Product Overview:</p> <p>Supports Intel® E810 Network Interface card in PCIe accelerator module 2U Full-Width Air-Cooled. Each PCIe accelerator module card kit E810 can only support one Intel® E810 Network Interface card. One kit must be ordered for each card.</p> <p>Kit Includes:</p> <p>(1) Front metal bracket – iPN M65598-xxx</p>


Description / Image	Order Information	Product Information
<p>PCIe* Accelerator Module Card Kit for Intel® Data Center GPU Max Series Accelerator Add-In Card</p> 	<p>iPC DNPACCLBZPVC MM# 99ARX3 UPC 735858532419 EAN 5032037263993 MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U Full-Width Air-Cooled <p>Product Overview:</p> <p>Supports Intel® Data Center GPU Max Series Accelerator add-in card in PCIe accelerator module 2U Full-Width Air-Cooled. Each kit can only support one Intel® Data Center GPU Max Series Accelerator add-in card. The kit must be ordered for each card.</p> <p>Kit Includes:</p> <p>(1) Front metal bracket – iPN M65385-xxx (1) Power cable – iPN N23117-xxx, used to connect the add-in card to the accelerator module connector board. (4) Screws M3 x 5.5 mm</p>
<p>PCIe Accelerator Module Card Kit A100</p> 	<p>iPC TNPACCLBZA100 MM# 99AJJC UPC 735858484893 EAN 5032037221658 MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U Full-Width Air-Cooled <p>Product Overview:</p> <p>Supports Nvidia® Tesla® A100 40/80 GB accelerator add-in card in PCIe accelerator module 2U Full-Width Air-Cooled. Each PCIe accelerator module card kit A100 can only support one Nvidia® Tesla® A100 40/80 GB accelerator add-in card. The kit must be ordered for each card.</p> <p>Kit Includes:</p> <p>(1) Front metal bracket – iPN M33267-xxx (1) Rear extension bracket – iPN M33268-xxx (1) Power cable – iPN M44106-xxx, used to connect the add-in card to the accelerator module connector board. (4) Screws M3 x 5.5 mm</p>

Description / Image	Order Information	Product Information
Liquid-Cooling VR TIM Application Tools 	iPC TNPLCVRTLS MM# 99AAKL UPC 735858474306 EAN 5032037212298 MOQ 1	Product Type: Accessory Where Used: <ul style="list-style-type: none"> • Compute module 1U half-width liquid-cooled • Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled Product Overview: To be used only for applying thermal interface material on CPU voltage regulators when installing or replacing compute module liquid-cooling loop DNPLCLPCM on Intel® D50DNP liquid-cooled modules. See the <i>Intel® Server D50DNP Family Integration and Service Guide</i> for installation, replacement, and usage instructions. Kit Includes: (1) dispenser with plunger
Liquid-Cooling VR TIM Application Nozzles 	iPC TNPLCVRTNZ MM# 99AF47 UPC 735858476263 EAN 5032037214148 MOQ 1	Product Type: Accessory Where Used: <ul style="list-style-type: none"> • Compute module 1U half-width liquid-cooled • Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled Product Overview: To be used only for applying thermal interface material on CPU voltage regulators when installing or replacing compute module liquid-cooling loop DNPLCLPCM on Intel® D50DNP liquid-cooled modules. See the <i>Intel® Server D50DNP Integration and Service Guide</i> for installation, replacement, and usage instructions. Kit Includes: (10) Nozzles
Liquid-Cooling VR TIM Compound 	iPC TNPLCVRCMPD MM# 99AAKM UPC 735858474313 EAN 5032037212304 MOQ 1	Product Type: Accessory Where Used: <ul style="list-style-type: none"> • Compute module 1U half-width liquid-cooled • Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled Product Overview: To be used only for applying thermal interface material on CPU voltage regulators when installing or replacing compute module liquid-cooling loop DNPLCLPCM on Intel® D50DNP liquid-cooled modules. See the <i>Intel® Server D50DNP Family Integration and Service Guide</i> for installation, replacement, and usage instructions. Kit Includes: (1) two-component cartridge

Description / Image	Order Information	Product Information
<p>M.2 Cold Plate Liquid-cooled Kit</p>  <p>71941250</p>	<p>iPC DNPM2LCHS MM# 99ARJG UPC 735858526029 EAN 5032037258098 MOQ 1</p>	<p>Product Type: Accessory Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width liquid-cooled • Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled <p>Product Overview: M.2 heat sink spare kit for liquid-cooled modules. Kit Includes:</p> <ul style="list-style-type: none"> (1) M.2 cold plate (2) M3 screw (2) thermal pads (long and short) (1) Riser bracket (1) spare thermal strips set
<p>I/O Breakout Cable</p> 	<p>iPC AXXCONNTDBG MM# 999D47 UPC 735858424349 EAN 5032037166638 MOQ 1</p>	<p>Product Type: Accessory Where Used:</p> <ul style="list-style-type: none"> • All Intel® D50DNP Module options <p>Product Overview: I/O breakout cable connector kit, compatible with all Intel® D50DNP Module options. Supports the following ports:</p> <ul style="list-style-type: none"> (1) serial port (1) VGA DE-15 port (2) USB 3.0 / 2.0 ports <p>Kit Includes:</p> <ul style="list-style-type: none"> (1) I/O Breakout Cable
<p>M.2 Heat Sink Air-cooled Kit</p>  <p>9016 ENP0012</p>	<p>iPC DNPM2HS MM# 99ARXM UPC 735858532556 EAN 5032037264136 MOQ 1</p>	<p>Product Type: Accessory Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width air-cooled • Compute module 1U half-width EVAC air-cooled • Management module 2U half-width air-cooled • PCIe* accelerator module 2U full-width air-cooled <p>Product Overview: M.2 heat sink kit for air-cooled modules. One kit is required for each M.2 SSD Kit Includes:</p> <ul style="list-style-type: none"> (1) M.2 heat sink with thermal pad attached (1) Thermal pad for SSD (1) M3 screw (1) Installation instructions

Description / Image	Order Information	Product Information
<p>DIMM Blank</p> 	<p>iPC DNPDMMBLNK</p> <p>MM# 99ARXP</p> <p>UPC 735858532563</p> <p>EAN 5032037264143</p> <p>MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width air-cooled • Compute module 1U half-width EVAC air-cooled • Management module 2U half-width air-cooled • PCIe* accelerator module 2U full-width air-cooled <p>Product Overview:</p> <p>To maintain proper airflow for air-cooled configurations, it is necessary to populate all memory slots with either memory modules or DIMM blanks. Order number of DIMM Blank kits to populate DIMM slots not occupied by memory DIMMs. Each DIMM Blank kit contains 4 DIMM Blanks</p> <p>Kit Includes:</p> <p>(4) Blanks per pack</p>
<p>Ethernet Management Port Module</p> 	<p>iPC AXXFCEMP</p> <p>MM# 999D48</p> <p>UPC 735858425988</p> <p>EAN 5032037168182</p> <p>MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> • All Intel® Server Chassis D50DNP options <p>Product Overview:</p> <p>Ethernet management port (EMP) module accessory kit, compatible with all Intel® Server Chassis D50DNP.</p> <ul style="list-style-type: none"> • Offers management of all compute modules in the chassis over single 1Gbps Ethernet LAN • Port forwarding • Hot-swappable • Two RJ45 ports allow daisy-chain up to 8 systems with one Ethernet connection <p>Kit Includes:</p> <p>(1) Ethernet management port module</p>
<p>1U Half-Width Module Blank</p> 	<p>iPC AXXFC1UHWBLANK</p> <p>MM# 99C0HF</p> <p>UPC 735858532624</p> <p>EAN 5032037264204</p> <p>MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> • Intel® Server Chassis FC2000 v2 half-width configuration air-cooled • Intel® Server Chassis FC2000 v2 half-width configuration liquid-cooled <p>Product Overview:</p> <p>This part is needed to fill module slots not occupied by modules in the air-cooled and liquid-cooled Intel® Server Chassis FC200 v2 family half-width.</p> <p>Kit Includes:</p> <p>(1) 1U half-width module blank</p>

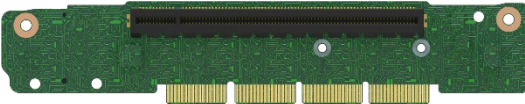
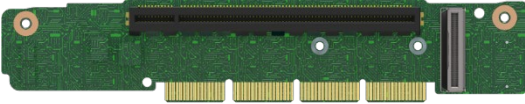
Description / Image	Order Information	Product Information
<p>1U Full-Width Module Blank</p> 	<p> iPC AXXFC1UFWBLANK MM# 99AT17 UPC 735858532617 EAN 5032037264198 MOQ 1 </p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 full-width configuration liquid-cooled <p>Product Overview:</p> <p>This part is used to fill module slots not occupied by modules in the liquid-cooled Intel® Server Chassis FC200 v2 family full-width.</p> <p>Kit Includes:</p> <p>(1) 1U full-width module blank</p>
<p>Intel® Trusted Platform Module (TPM) 2.0 Not supported in China</p> 	<p> iPC AXXTPMENC9 MM# 99C8ZW UPC 00735858527378 EAN 5032037259385 MOQ 1 </p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> All Intel® D50DNP Module options <p>Product Overview:</p> <p>A TPM is a hardware-based security device that addresses the growing concern on boot process integrity and offers better data protection. TPM protects the system start-up process by ensuring that it is tamper-free before releasing system control to the operating system. A TPM device provides secured storage to store data, such as security keys and passwords. In addition, a TPM device has encryption and hash functions.</p> <p>AXXTPMENC9 implements TPM as per TPM PC Client specifications revision 2.0 by the Trusted Computing Group (TCG)</p> <p>Kit Includes:</p> <p>(1) AXXTPMENC9 TPM module (1) Phillips head screw (1) Tamper resistant head screw (1) plastic anchor (standoff)</p>

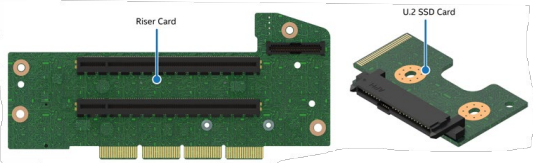
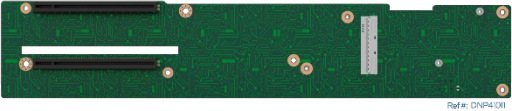
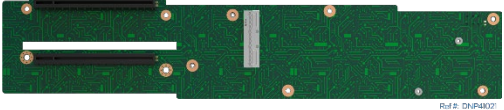
Description / Image	Order Information	Product Information
<p>Intel® Trusted Platform Module (TPM) 2.0 China compatible</p> 	<p>iPC AXXTPMCHNE8 MM# 960608 UPC 00735858347341 EAN 5032037107068 MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> All Intel® D50DNP Module options <p>Product Overview:</p> <p>Note: AXXTPMCHNE8 compatible for use in China.</p> <p>A TPM is a hardware-based security device that addresses the growing concern on boot process integrity and offers better data protection. TPM protects the system start-up process by ensuring that it is tamper-free before releasing system control to the operating system. A TPM device provides secured storage to store data, such as security keys and passwords. In addition, a TPM device has encryption and hash functions.</p> <p>AXXTPMCHNE8 implements TPM as per TPM PC Client specifications revision 2.0 by the Trusted Computing Group (TCG)</p> <p>Kit Includes:</p> <p>(1) AXXTPMCHNE8 TPM module (1) Phillips head screw (1) Tamper resistant head screw (1) plastic anchor (standoff)</p>
<p>Advanced System Management Key</p> <p>No Image</p>	<p>iPC ADVSYSMGMTKEY MM# 99AJX5 UPC N/A EAN N/A MOQ 1</p>	<p>Product Type: Accessory</p> <p>Where Used:</p> <ul style="list-style-type: none"> All Intel® D50DNP Module options <p>Product Overview:</p> <p>Software electronic key to be uploaded to the BMC.</p> <p>Note: Enables advance system management features of Integrated BMC Web Console. For more information, see the <i>Intel® Server D50DNP Family Technical Product Specification</i>.</p> <p>Kit Includes:</p> <p>(1) Advanced System Management software license key</p>
<p>Intel® Virtual RAID on CPU – Standard License Activation Key</p> <p>No Image</p>	<p>iPC VROCSTANKEY MM# 99CAGD UPC N/A EAN N/A MOQ 1</p>	<p>Product type: Accessory</p> <p>Where used:</p> <ul style="list-style-type: none"> All Intel® D50DNP Module options <p>Product overview:</p> <p>Intel® VROC activation license key used to enable RAID levels 0 and 1 for Intel and non-Intel NVMe* SSDs.</p> <p>Kit includes:</p> <p>(1) Standard Intel® VROC activation license key</p>

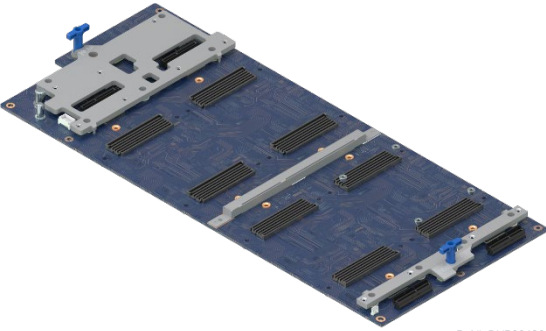
4. Spare and Replacement Parts (FRUs)

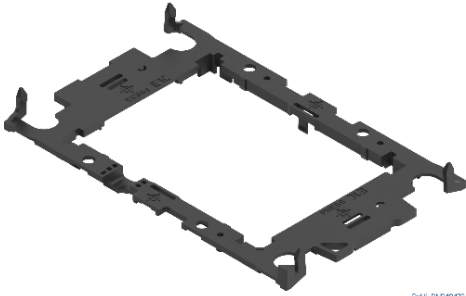
System integrators and distributors may choose to hold additional stock of individual system components. Intel makes available the following spare and replacement parts (FRUs) compatible with the specified Intel® Server family.


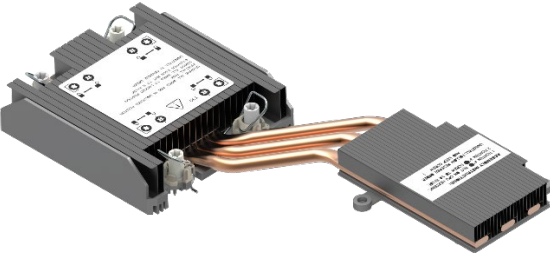

Table 20. Spare and Replacement Parts


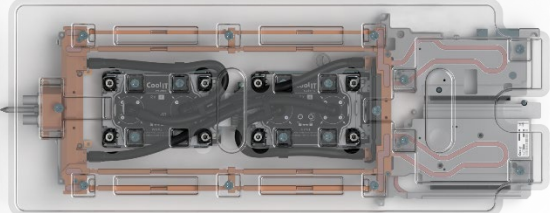

Description / Image	Order Information	Product Information
<p>1U PCIe* x16 Standard Riser Card For Riser Slot #2</p>  <p>Ref #: DNP40950</p>	<p>iPC DNP1URISER MM# 99ARX4 UPC 735858532426 EAN 5032037264006 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> Any 1U Module <p>Product Overview: Supports one low-profile PCIe 5.0 (x16 electrical, x16 mechanical) add-in card and one SATA/PCIe 80/110 mm M.2 device Can only be used in Riser Slot #2 on the server board</p> <p>Kit Includes: (1) Riser card DNP1URISER (1) M.2 standoff and screw</p>
<p>1U PCIe x16 MCIO* Riser Card For Riser Slot #1</p>  <p>Ref #: DNP40991</p>	<p>iPC DNP1UMRISER MM# 99ARX5 UPC 735858532433 EAN 5032037264013 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> Any 1U Module <p>Product Overview: Supports one low-profile PCIe 5.0 (x16 electrical, x16 mechanical) add-in card and one SATA/PCIe 80/110 mm M.2 device Can only be used in Riser Slot #1 on the server board</p> <p>Kit Includes: (1) –Riser card DNP1UMRISER (1) M.2 standoff and screw</p>

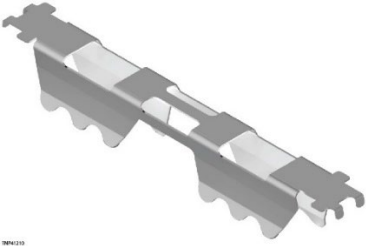
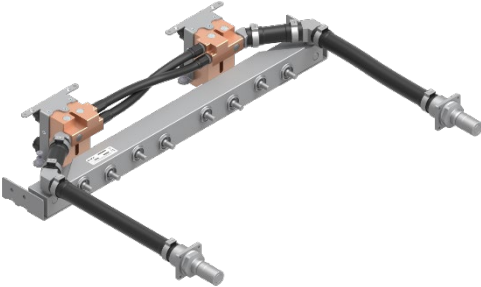
Description / Image	Order Information	Product Information
<p>2U PCIe* x16 Riser Card For Both Riser Slots</p> 	<p>iPC DNP2UMRISER MM# 99ARX6 UPC 735858532440 EAN 5032037264020 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> Management module 2U half-width air-cooled PCIe accelerator module 2u full-width air-cooled <p>Product Overview: Supports up to two low-profile PCIe 5.0 (x16 electrical, x16 mechanical) add-in cards, one 2.5" U.2 PCIe NVMe* SSD, and one SATA/PCIe 80/110 mm M.2 device. Can be used in both Riser Slots #1 or #2 on the server board</p> <p>Kit Includes: (1) 2U riser card (1) U.2 PCIe NVMe SSD adapter card (1) M.2 standoff and screw</p>
<p>PCIe Accelerator Module Riser Card 1</p> 	<p>iPC DNPACCLRISER1 MM# 99ARX7 UPC 735858532464 EAN 5032037264044 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U full-width air-cooled <p>Product Overview: Supports up to 2 full height, full length, double width PCIe 5.0 (x16 electrical, x16 mechanical) add-in cards for acceleration solutions.</p> <p>Kit Includes: (1) Accelerator module riser card 1</p>
<p>PCIe Accelerator Module Riser Card 2</p> 	<p>iPC DNPACCLRISER2 MM# 99ARX8 UPC 735858532471 EAN 5032037264051 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U full-width air-cooled <p>Product Overview: Supports up to 2 full height, full length, double width PCIe 5.0 (x16 electrical, x16 mechanical) add-in cards for acceleration solutions.</p> <p>Kit Includes: (1) Accelerator module riser card 2</p>

Description / Image	Order Information	Product Information
<p>Intel® Data Center GPU Max Series Accelerator Module Carrier Base Board</p>  <p>Ref #: DNP30680</p>	<p>iPC A4C00A00B02 MM# 99C7PN UPC 00735858531160 EAN 5032037262743 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled <p>Product Overview: Spare Intel® Data Center GPU Max Series Accelerator Carrier Base Board.</p> <p>Kit Includes: (1) Carrier Base Board.</p>
<p>PCIe* Accelerator Module Connector Board</p>  <p>Ref #: DNP10680</p>	<p>iPC DNPACCLCNBRD MM# 99ARX9 UPC 735858532488 EAN 5032037264068 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> PCIe accelerator module 2U full-width air-cooled <p>Product Overview: Power connector board for air-cooled 2U Accelerator Compute Module.</p> <p>Kit Includes: (1) PCIe accelerator module connector board</p>
<p>D50DNP CPU Carrier Clip E1A</p>  <p>Ref #: FXF40480</p>	<p>iPC AXXSPRXCCCC MM# 99ARX0 UPC 735858518642 EAN 5032037251518 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Any Compute module <p>Product Overview: The processor carrier clip is used to attach the processor to the heat sink before the PHM is installed onto the processor socket. The type of the processor carrier clips (E1A or E1B) is defined by the processor model.</p> <p>Kit Includes: (1) CPU Carrier Clip E1A for 4th & 5th Gen Intel® Xeon® Scalable Processor XCC models</p>

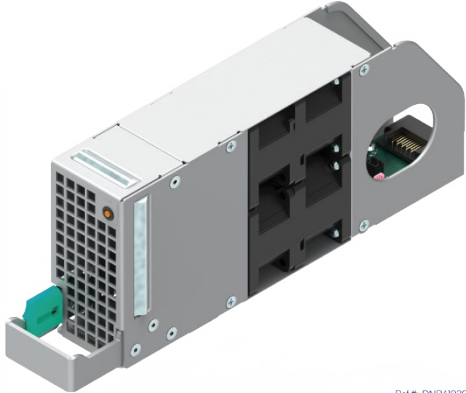
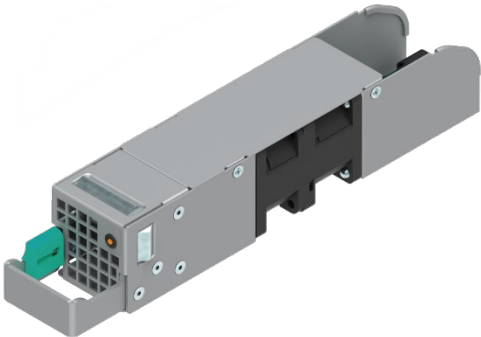
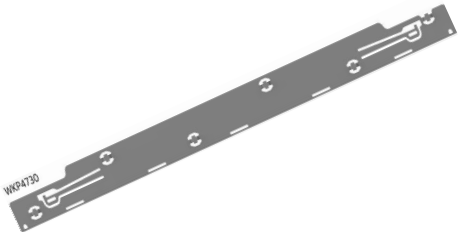
Description / Image	Order Information	Product Information
D50DNP CPU Carrier Clip E1B 	iPC AXXSPRMCCCC MM# 99ARX2 UPC 735858518659 EAN 5032037251525 MOQ 1	Product Type: Spare FRU Where Used: <ul style="list-style-type: none"> Any Compute module Product Overview: The processor carrier clip is used to attach the processor to the heat sink before the PHM is installed onto the processor socket. The type of the processor carrier clips (E1A or E1B) is defined by the processor model. Kit Includes: (1) CPU Carrier Clip E1B for 4 th & 5 th Gen Intel® Xeon® Scalable Processor MCC models
D50DNP CPU Carrier Clip E1C 	iPC AXXSPRHBMcC MM# 99ARX1 UPC 735858518666 EAN 5032037251532 MOQ 1	Product Type: Spare FRU Where Used: <ul style="list-style-type: none"> Any Compute module Product Overview: The processor carrier clip is used to attach the processor to the heat sink before the PHM is installed onto the processor socket. Kit Includes: (1) CPU Carrier Clip E1C for Intel® Xeon® CPU Max Series Processors
1U Air-Cooled Heat Sink Front 	iPC DNP1UHSF MM# 99ARXA UPC 735858532495 EAN 5032037264075 MOQ 1	Product Type: Spare FRU Where Used: <ul style="list-style-type: none"> Compute module 1U half-width air-cooled Product Overview: Standard heat sink for 1U air-cooled Intel® D50DNP Modules, front position. Kit Includes: (1) Heat sink with thermal pad applied to the bottom side


Description / Image	Order Information	Product Information
<p>1U Air-Cooled Heat Sink Rear</p>  <p>Ref #: DNP40970</p>	<p>iPC DNP1UHSB MM# 99ARJC UPC 735858532501 EAN 5032037264082 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width air-cooled • Compute module 1U half-width EVAC air-cooled <p>Product Overview: Standard heat sink for 1U air-cooled Intel® D50DNP Modules, rear position.</p> <p>Kit Includes: (1) Heat sink with thermal pad applied to the bottom side</p>
<p>1U EVAC Heat Sink</p>  <p>Ref #: DNP40770</p>	<p>iPC DNPEVACHS MM# 99ARXH UPC 735858532532 EAN 5032037264112 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width EVAC air-cooled <p>Product Overview: EVAC heat sink available only for front position in 1U air-cooled modules</p> <p>Kit Includes: (1) EVAC heat sink with thermal pad applied to the bottom side</p>
<p>2U Air-Cooled Heat Sink Front</p>  <p>Ref #: DNP40980</p>	<p>iPC TNP2UHSF MM# 99ARXD UPC 735858532518 EAN 5032037264099 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> • Management module 2U half-width air-cooled • PCIe* accelerator module 2U full-width air-cooled <p>Product Overview: Standard heat sink for 2U air-cooled Intel® D50DNP Modules, front position.</p> <p>Kit Includes: (1) Heat sink with thermal pad applied to the bottom side</p>

Description / Image	Order Information	Product Information
<p>2U Air-Cooled Heat Sink Rear</p>  <p>Ref #: DNP41000</p>	<p>iPC TNP2UHSB MM# 99ARXF UPC 735858532525 EAN 5032037264105 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Management module 2U half-width air-cooled PCIe* accelerator module 2U full-width air-cooled <p>Product Overview: Standard heat sink for 2U air-cooled Intel® D50DNP Modules, rear position.</p> <p>Kit Includes: (1) Heat sink with thermal pad applied to the bottom side</p>
<p>Compute Module Liquid-Cooling Loop</p>  <p>Ref #: DNP41940</p>	<p>iPC DNPLCLPCM MM# 99ARXJ UPC 735858526302 EAN 5032037258371 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Compute module 1U half-width liquid-cooled Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled <p>Product Overview: Liquid-cooling loop spare kit for 1U liquid-cooled modules. Additional components (TNPLCVRTLS, TNPLCVRTNZ, TNPLCVRCPD) are required for applying thermal interface material on CPU voltage regulators</p> <p>Kit Includes: (1) Passive Cold Plate Loop Assembly (1) Plastic carrying case (1) Memory cooling kit (1) Screw Kit</p>
<p>Intel® Data Center GPU Max Series Accelerator Module Liquid-Cooling Loop</p>  <p>Ref #: DNP30690</p>	<p>iPC DNPLCLPAM MM# 99ARXK UPC 735858526319 EAN 5032037258388 MOQ 1</p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled <p>Product Overview: Liquid-cooling loop spare kit for 1U Intel® Data Center GPU Max Series Accelerator liquid-cooled modules</p> <p>Kit Includes: (1) Passive Cold Plate Loop Assembly</p>

Description / Image	Order Information	Product Information
<p>Liquid-Cooling Loop DIMM Clip Kit Spare Kit for Liquid-Cooling Loop</p> 	<p>iPC DNPLCDIMMCLIPM MM# 99C654 UPC 00735858526333 EAN 5032037258401 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width liquid-cooled • Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled <p>Product Overview: DIMM retention clip and mylar pads spare kit. To be installed in memory cooling assemblies in the liquid-cooling loop.</p> <p>Kit Includes: (4) Pieces of DIMM Clip and Mylar pads.</p>
<p>DIMM PMIC Thermal Interface Material (TIM) Kit Spare Kit for Liquid-Cooling Loop</p>	<p>iPC DNPLCDMTM MM# 99ARXR UPC 735858526326 EAN 5032037258395 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> • Compute module 1U half-width liquid-cooled • Intel® Data Center GPU Max Series Accelerator module 1U full-width liquid-cooled <p>Product Overview: DIMM PMIC thermal interface material spare kit. To be attached to a DIMM PMIC component in the liquid-cooling loop.</p> <p>Kit Includes: (4) Pieces of DIMM PMIC thermal interface material pads (iPN N15655-001).</p>
<p>Liquid-Cooled Chassis Manifold</p> 	<p>iPC FCXXLCMDMFD MM# 99ARJR UPC 735858526296 EAN 5032037258364 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> • Intel® Server Chassis FC2000 v2 half-width configuration liquid-cooled • Intel® Server Chassis FC2000 v2 full-width configuration liquid-cooled <p>Product Overview: Liquid-cooled chassis manifold for chassis plumbing connections spare kit.</p> <p>Kit Includes: (1) Liquid-cooled chassis manifold assembly (1) installation instruction</p>

Description / Image	Order Information	Product Information
<p>Power Distribution Board Assembly</p>  <p>Ref #: DNP40090</p>	<p> iPC FCXXPDBASSMBL2 MM# 99ARZ7 UPC 735858532570 EAN 5032037264150 MOQ 1 </p>	<p>Product Type: Spare FRU</p> <p>Where Used: All chassis models</p> <p>Product Overview: Power distribution board assembly spare kit.</p> <p>Kit Includes: (1) Power distribution board</p>
<p>Spare Fan Assembly with Integrated Dual Rotor 60 mm Fan For Air-Cooled Chassis</p>  <p>Ref #: DNP40060</p>	<p> iPC FCXX60MMACFAN MM# 99AT13 UPC 735858532600 EAN 5032037264181 MOQ 1 </p>	<p>Product Type: Spare FRU</p> <p>Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 Half-Width Configuration Air-Cooled Intel® Server Chassis FC2000 v2 Full-Width Configuration Air-Cooled <p>Product Overview: Fan assembly with integrated dual rotor 60 mm fan for air-cooled chassis.</p> <p>Kit Includes: (1) Fan assembly with integrated dual rotor 60 mm fan</p>

Description / Image	Order Information	Product Information
<p>Spare Fan Assembly with Integrated Dual Rotor 40 mm Fan For Air-Cooled Chassis</p>  <p>Ref #: DNP41030</p>	<p>iPC FCXX40MMACFAN MM# 99ARZ8 UPC 735858532587 EAN 5032037264167 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 Half-Width Configuration Air-Cooled Intel® Server Chassis FC2000 v2 Full-Width Configuration Air-Cooled <p>Product Overview: Fan assembly with two integrated dual rotor 40 mm fans for air-cooled chassis. Kit Includes: (1) Fan assembly with integrated dual rotor 40 mm fan</p>
<p>Spare Fan Assembly with Integrated Dual Rotor 40 mm Fan For Liquid-Cooled Chassis</p>  <p>Ref #: DNP41040</p>	<p>iPC FCXX40MMLCFAN MM# 99ARZ9 UPC 735858532594 EAN 5032037264174 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 half-width configuration liquid-cooled Intel® Server Chassis FC2000 v2 full-width configuration liquid-cooled <p>Product Overview: Fan assembly with integrated dual rotor 40 mm fan for liquid-cooled chassis. Kit Includes: (1) Fan assembly with integrated dual rotor 40 mm fan</p>
<p>Internal Rail Kit</p>  <p>W094730</p>	<p>iPC FCXX1USPPRT MM# 999D4H UPC 735858426053 EAN 5032037168250 MOQ 1</p>	<p>Product Type: Spare FRU Where Used:</p> <ul style="list-style-type: none"> Intel® Server Chassis FC2000 v2 Half-Width Configuration Air-Cooled Intel® Server Chassis FC2000 v2 Full-Width Configuration Liquid-Cooled <p>Product Overview: Internal rail spare kit for 1U compute modules. One kit is used for 2U system supporting four 1U half-width modules, combination of two 1U modules and one 2U module or two 1U full-width modules. Kit Includes: (4) Rails.</p>

Description / Image	Order Information	Product Information
<p>Fixed Rail</p>  <p>W014280</p>	<p>iPC FCXXRAILKIT</p> <p>MM# 999D4J</p> <p>UPC 735858425971</p> <p>EAN 5032037168175</p> <p>MOQ 1</p>	<p><u>Product Type:</u> Spare FRU</p> <p><u>Where Used:</u> All chassis models</p> <p><u>Product Overview:</u> Maximum supported weight: 330 lbs. (150kg) Tool-less chassis installation</p> <p><u>Kit Includes:</u> (1) fixed rail kit</p>

Appendix A. Glossary

Term	Definition
Intel® AVX-512	Intel® Advanced Vector Extensions 512
BOM	Bill of Materials
CRPS	Common Redundant Power Supply
DDR5	Double-Data Rate 5
DIMM	Dual Inline Memory Module
DPC	DIMMs per Channel
DR	Double Rank
EAN	International Article Number (Barcode)
ECC	Error Correcting Code
EMP	Ethernet Management Port
FRU	Field Replaceable Unit
iPC	Intel Product Code – used to identify an orderable Intel product
iPN	Intel part number – an internal part number issued to a component within a product bill of material (BOM). Individual Intel part numbers are not orderable unless it is included within an orderable Intel product code (iPC)
KVM	Keyboard, Video, Mouse
MM#	Material Master number - used to identify an orderable Intel product
MOQ	Minimum Order Quantity
NMI	Non-Maskable Interrupt
NVMe*	NVM Express – based on Non-Volatile Memory Host Controller Interface Specification (NVMHCI)
OR	Octa Rank
PCIe*	PCI Express
PMem	Persistent Memory
QR	Quad Rank
RDIMM	Registered DIMM
SDRAM	Synchronous Dynamic Random Access Memory
SMP	Server Management Processor
SSD	Solid State Drive
SR	Single Rank
Intel® UPI	Intel® Ultra Path Interconnect
UPC	Universal Product Code (Barcode)
VROC	Intel® Virtual RAID on CPU