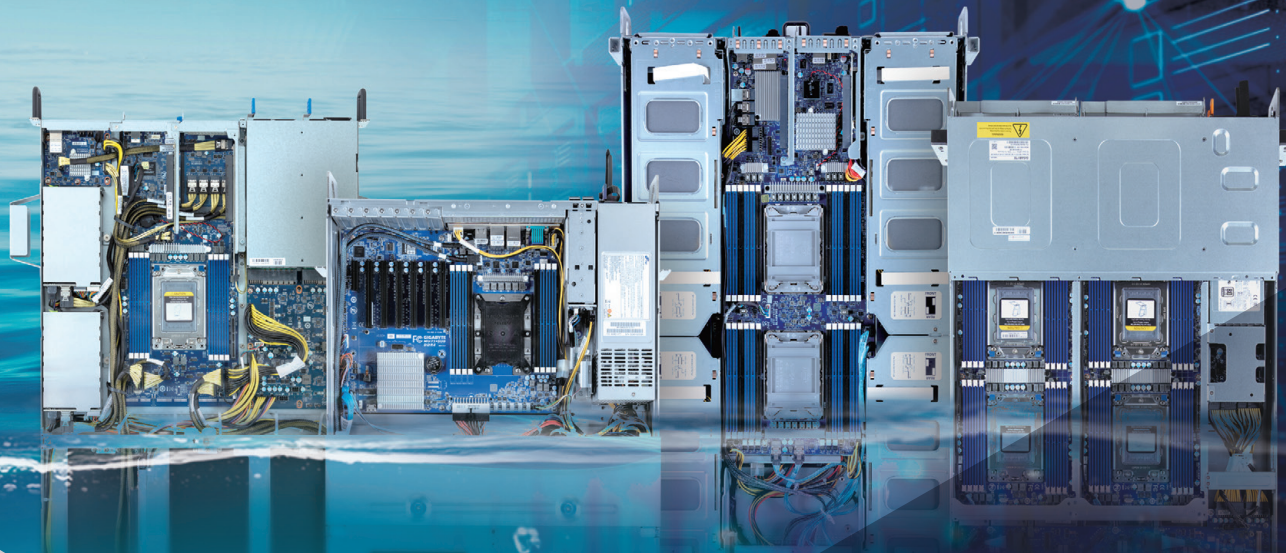


# GIGABYTE™



# Single-phase Immersion Cooling

## One Stop Solution

Data centers must be reimagined if they are to sustain the compute performance required to continue quantum leaps in discoveries and provide timely insights. To keep pace, GIGABYTE has researched and developed a new approach that goes beyond air cooled infrastructure, and into a method that dissipates heat better, Single-phase Immersion Cooling. This has proven to be more energy efficient and scalable for deployments across the globe, while being environmentally friendly and safe. For this new approach, GIGABYTE has created a one stop solution.



# GIGABYTE Immersion Cooling Solution

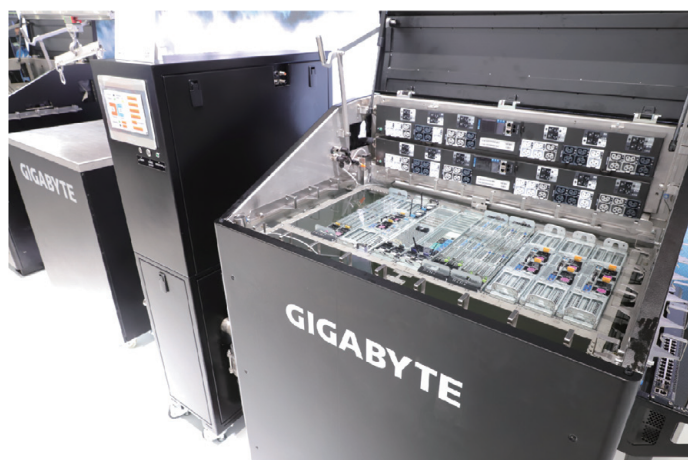
Dandy Yeh, Founder and Chairperson of GIGABYTE, stated, "GIGABYTE has always been focused on improving server performance. Today, in the face of cooling issues for CPUs and GPUs with higher and higher computing performance, we are not only working with industry-leading partners to help companies care for their operations and sustainable development, we have also developed single-phase immersion cooling products, allowing users to deploy green computing quickly."

The effects of the pandemic have brought many changes to traditional business models. Large-scale remote work and a shift to online activities is widespread. Coupled with mainstream e-commerce and financial technologies, the need for big data and cloud computing has greatly increased, leading to "resilience challenges" for data centers of large companies. At the same time, Taiwan aims to realize the goal of net-zero emissions by 2050. Therefore, while attempting to reduce the power consumption of data centers, improving energy efficiency has become an urgent matter for all IT infrastructures. To remedy this, GIGABYTE has launched a one-stop solution for single-phase immersion cooling by leveraging expertise in high-performance computing and cooling designs.

"Net-zero emissions cannot be delayed. Our single-phase immersion cooling products are not only compact in size and comprehensive, allowing for fast deployment, but also able to reduce the total cost of ownership (TCO) for our customers. We are able to overcome the traditional high costs associated with new data centers and become an accelerator for corporate net-zero emissions," said Dandy Yeh.

In 2022, GIGABYTE dipped its toes into immersion cooling, and has since gone all in. For its efforts, GIGABYTE has received the recognition of academia, scientific research institutes, government agencies, and corporate customers, including the adoption of GIGABYTE's immersion computing products by internationally renowned foundries and telecommunication giants.

GIGABYTE possesses a complete server product line and a wealth of manufacturing experience, and it has directly translated into the success of new immersion cooling solutions as customers' demand for green computing continues to grow.



▲ A1P0-EB0 Tank



▲ A103-CC0 Tank



▲ Overhead view of A1P0-EB0 Tank



▲ 4U POC Tank & IT Lift



# Charting a New Path with Advanced Cooling

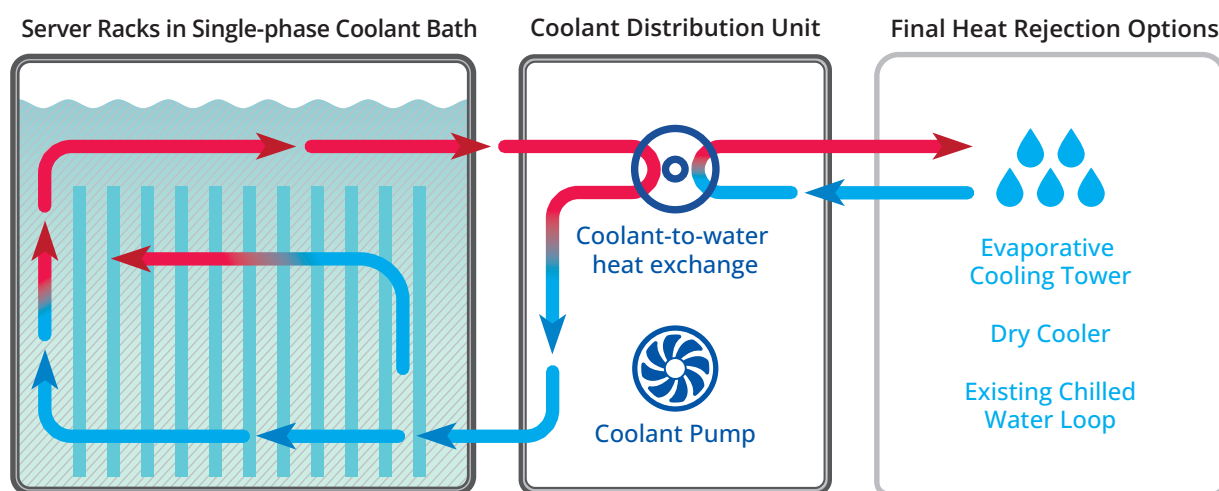
Reliability, availability, and serviceability are all traits found in the best data centers of today and tomorrow. As IT hardware and technology continue to improve, they are also making it tough for current data centers to be sustainable with the traditional fans, HVAC, and hot/cold aisles.

Why? A major reason - increase in rack power density. For each new generation of chips, the die size is shrunk while the number of transistors has increased, and this translates to higher performance, but also more heat. For instance, a GPU dense server can support CPUs and GPUS up to 300W TDP each component, but new generations of hardware are increasing the TDP by 25% or more, which is unsustainable in the same footprint. Consequently, servers are reaching thermal limitations. To maintain the same hardware density, a more efficient cooling approach is needed.

Data center architects realize this and quantify this efficiency using power usage effectiveness (PUE). PUE is a ratio that compares how much power enters the data center to the power delivered to IT equipment. Ideally, the PUE value would be 1.0; however, traditional air-cooled data centers achieve a PUE of ~1.65, which isn't horrible, but it shows room for improvement. Single-phase immersion cooling can achieve a PUE in the ballpark of 1.02-1.03.

## How it Works

Single-phase immersion cooling redefines the data center from how IT equipment is cooled to the reduction in the amount and complexity of the data center infrastructure. By submerging IT equipment into a dielectric liquid bath, heat is removed faster than air while no damage or degrading occurs to all components. The liquid coolant with a higher specific heat capacity than air can quickly remove the heat. The heat given off by CPUs, GPUs, and other components is transferred directly to the liquid or via a heatsink. The warm liquid is then pumped out by a coolant distribution unit (CDU) or dry cooler. In the CDU cases, a second transfer occurs as the heat is then transferred to facility water. The resulting cooled coolant is pumped back into the immersion tank while the warmed water continues on to a heat exchanger to be expelled. And the cycle continues. Also, as the name implies, the fluid in the immersion tank does not change state, so there is no evaporation or condensation occurring, which ensures operator safety and allows for easy servicing of the tank and IT equipment.



▲ Heated coolant exits top of rack. Coolant returns to rack cooled at user-specified temperature.

## The GIGABYTE One Stop Immersion Solution

### “ Immersion Tank + Immersion Ready Server + Coolant + Service ”

GIGABYTE aims to give customers a hub to design and acquire all the necessary technology to deploy a single-phase immersion cooling data center. As a leader in enterprise technology, GIGABYTE has the ability to leverage current server designs to accommodate new specialized servers for immersion cooling deployments in tanks provided by GIGABYTE or its other global immersion partners. The first wave of immersion ready servers came as a result of customers' requests so it's best to contact a GIGABYTE sales representative to start the path to joining the immersion era.



Compatibility



Scalability



High Performance



Power Efficiency



Lower TCO



High Availability

# Immersion Cooling Server

**G294-S42-IAP1**



**G293-S45-IAP1**



**G293-Z42-IAP1**



|                        |                                                       |                                                                                   |                                                       |
|------------------------|-------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>Workloads</b>       | HPC, AI, ML, Data analytics                           | HPC, AI, ML, Data analytics                                                       | HPC, AI, ML, Data analytics                           |
| <b>Form Factor</b>     | 2U GPU Server                                         | 2U GPU Server                                                                     | 2U GPU Server                                         |
| <b>Processor</b>       | Dual Intel® Xeon® 6 (6700E/6700P/6500P-series)        | Dual 5th/4th Gen Intel® Xeon® Scalable<br>Dual Intel® Xeon® CPU Max Series        | Dual AMD EPYC™ 9005/9004                              |
| <b>Memory</b>          | 24 x DDR5 RDIMM/MRDIMM                                | 16 x DDR5 RDIMM slots                                                             | 24 x DDR5 RDIMM slots                                 |
| <b>Networking</b>      | 2 x 10GbE LAN, 1 x MLAN                               | 2 x 10GbE LAN, 1 x MLAN                                                           | 2 x 10GbE LAN, 1 x MLAN                               |
| <b>Storage</b>         | 8 x 2.5" Gen5 NVMe/SATA/SAS4                          | 8 x 2.5" SATA/SAS<br><small>*NVMe support requires additional NVMe cables</small> | 4 x 2.5" Gen5 NVMe/SATA/SAS<br>4 x 2.5" SATA/SAS      |
| <b>Expansion Slots</b> | 8 x Dual slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots | 8 x Dual slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots                             | 8 x Dual slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots |
| <b>Power Supply</b>    | Dual 3000W Titanium                                   | Dual 3000W Titanium                                                               | Dual 3000W Titanium                                   |

**G292-Z45-ICU1/ICM1**



**G292-Z43-ICU1/ICM1**



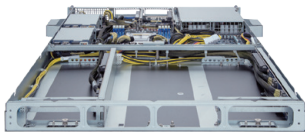
**G292-280-IAY1/IAP1**



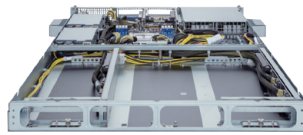
|                        |                                                          |                                                          |                                                          |
|------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
| <b>Workloads</b>       | HPC, AI, ML, Data analytics                              | HPC, AI, ML, Data analytics                              | HPC, AI, ML, Data analytics                              |
| <b>Form Factor</b>     | 2U GPU Server                                            | 2U GPU Server                                            | 2U GPU Server                                            |
| <b>Processor</b>       | Dual AMD EPYC™ 7003/7002                                 | Dual AMD EPYC™ 7003/7002                                 | Dual 3rd Gen Intel® Xeon® Scalable                       |
| <b>Memory</b>          | 16 x DDR4 RDIMM/LRDIMM                                   | 16 x DDR4 RDIMM/LRDIMM                                   | 24 x DDR4 RDIMM/LRDIMM                                   |
| <b>Networking</b>      | 2 x 1GbE LAN, 1 x MLAN                                   | 2 x 10GbE LAN, 1 x MLAN                                  | 2 x 10GbE LAN, 1 x MLAN                                  |
| <b>Storage</b>         | 8 x 2.5" SATA/SAS                                        | 4 x 2.5" Gen4 NVMe/SATA/SAS<br>4 x 2.5" SATA/SAS         | 4 x 2.5" Gen4 NVMe/SATA/SAS<br>4 x 2.5" SATA/SAS         |
| <b>Expansion Slots</b> | 8 x Dual slot Gen4 GPUs<br>2 x LP PCIe Gen4 x16 slots    | 16 x Single slot Gen4 GPUs<br>2 x LP PCIe Gen4 x16 slots | 8 x Dual slot Gen4 GPUs<br>2 x LP PCIe Gen4 x16 slots    |
| <b>Power Supply</b>    | [ICU1] Dual 2200W Platinum<br>[ICM1] Dual 2200W Titanium | [ICU1] Dual 2200W Platinum<br>[ICM1] Dual 2200W Titanium | [IAY1] Dual 3200W Platinum<br>[IAP1] Dual 3000W Titanium |

# Immersion Cooling Server

## G152-Z12-200



## G152-Z12-400



## S251-300-IBC1/IBH1



|                        |                                                       |                                                         |                                                                                          |
|------------------------|-------------------------------------------------------|---------------------------------------------------------|------------------------------------------------------------------------------------------|
| <b>Workloads</b>       | HPC, AI, ML, Data analytics                           | HPC, AI, ML, Data analytics                             | Storage                                                                                  |
| <b>Form Factor</b>     | 1U GPU Server                                         | 1U GPU Server                                           | 2U                                                                                       |
| <b>Processor</b>       | Single AMD EPYC™ 7003/7002                            | Single AMD EPYC™ 7003/7002                              | Single 2nd Gen Intel® Xeon® Scalable<br>Single Intel® Xeon® W-3200                       |
| <b>Memory</b>          | 8 x DDR4 RDIMM/LRDIMM                                 | 8 x DDR4 RDIMM/LRDIMM                                   | 8 x DDR4 RDIMM/LRDIMM                                                                    |
| <b>Networking</b>      | 2 x 10GbE LAN, 1 x MLAN                               | 2 x 10GbE LAN, 1 x MLAN                                 | 2 x 1GbE LAN, 1 x MLAN                                                                   |
| <b>Storage</b>         | 4 x 2.5" Gen4 NVMe (internal)                         | 4 x 2.5" Gen4 NVMe (internal)                           | 24 x 3.5" SATA/SAS + 2 x 2.5" SATA<br>1 x M.2 slot (PCIe Gen3 x4)                        |
| <b>Expansion Slots</b> | 2 x Dual slot Gen4 GPUs<br>2 x LP PCIe Gen4 x16 slots | 4 x Single slot Gen4 GPUs<br>2 x LP PCIe Gen4 x16 slots | 3 x LP PCIe Gen3 x16 slots<br>3 x LP PCIe Gen3 x8 slots<br>1 x LP PCIe Gen3 x4 slots     |
| <b>Power Supply</b>    | Dual 2000W Platinum                                   | Dual 2000W Platinum                                     | <a href="#">[IBC1]</a> Dual 1300W Platinum<br><a href="#">[IBH1]</a> Dual 1300W Titanium |

## XV24-AX0-IAJ1



## XV23-ZX0-IAJ1



|                        |                                                                               |                                                                               |
|------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| <b>Workloads</b>       | HPC, AI, ML, Data analytics                                                   | HPC, AI, ML, Data analytics                                                   |
| <b>Form Factor</b>     | 2U MGX Server                                                                 | 2U MGX Server                                                                 |
| <b>Processor</b>       | Dual Intel® Xeon® 6<br>(Intel Xeon 6900-series)                               | Dual AMD EPYC™ 9005/9004                                                      |
| <b>Memory</b>          | 24 x DDR5 RDIMM/MRDIMM                                                        | 24 x DDR5 RDIMM                                                               |
| <b>Networking</b>      | 2 x 10GbE LAN, 1 x MLAN                                                       | 2 x 10GbE LAN, 1 x MLAN                                                       |
| <b>Storage</b>         | 6 x 2.5" Gen5 NVMe/SATA/SAS4<br>*Storage card is required to support SATA/SAS | 6 x 2.5" Gen5 NVMe/SATA/SAS4<br>*Storage card is required to support SATA/SAS |
| <b>Expansion Slots</b> | 4 x Dual slot Gen5 GPUs<br>3 x FHFL PCIe Gen5 x16 slots                       | 4 x Dual slot Gen5 GPUs<br>3 x FHFL PCIe Gen5 x16 slots                       |
| <b>Power Supply</b>    | 4 x 2000W Titanium                                                            | 4 x 2000W Titanium                                                            |

# Immersion Cooling Server

## H374-A81-IAW1



## H274-S61-IAW1



## H263-S64-IAW1



|                        |                                                                                              |                                                                       |                                                                      |
|------------------------|----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------|----------------------------------------------------------------------|
| <b>Workloads</b>       | HPC, HCI, Hybrid/private cloud                                                               | HPC, HCI, Hybrid/private cloud                                        | HPC, HCI, Hybrid/private cloud                                       |
| <b>Form Factor</b>     | 3U 4-node High Density Server                                                                | 2U 4-Node High Density Server                                         | 2U 4-Node High Density Server                                        |
| <b>Processor</b>       | Dual Intel® Xeon® 6 per node<br>(Intel Xeon 6900-series)                                     | Dual Intel® Xeon® 6 per node<br>(6700E/6700P/6500P-series)            | Dual 5th/4th Gen Intel® Xeon®<br>Scalable per node                   |
| <b>Memory</b>          | 96 x DDR5 RDIMM/MRDIMM                                                                       | 64 x DDR5 RDIMM/MRDIMM                                                | 64 x DDR5 RDIMM                                                      |
| <b>Networking</b>      | 8 x 1GbE LAN, 4 x MLAN                                                                       | 8 x 1GbE LAN, 4 x MLAN                                                | 4 x MLAN, 1 x CMC                                                    |
| <b>Storage</b>         | 8 x 2.5" Gen5 NVMe/SATA/SAS4<br><small>*Storage card is required to support SATA/SAS</small> | 8 x 2.5" Gen5 NVMe/SATA/SAS4<br>Optional 4 x M.2 slots (PCIe Gen4 x4) | 8 x 2.5" Gen4 NVMe/SATA/SAS<br>Optional 4 x M.2 slots (PCIe Gen4 x4) |
| <b>Expansion Slots</b> | 16 x LP PCIe Gen5 x16 slots                                                                  | 8 x LP PCIe Gen5 x16 slots<br>4 x OCP 3.0 Gen5 x16 slots              | 4 x LP PCIe Gen5 x16 slots<br>4 x OCP 3.0 Gen5 x16 slots             |
| <b>Power Supply</b>    | 3 x 3000W Titanium                                                                           | Dual 3000W Titanium                                                   | Dual 3000W Titanium<br>Optional 2+1 redundant PSU                    |

## H273-Z82-IAW1



## H262-Z6B-ICU1/ICP1



## H174-A80-IAS1



|                        |                                                                      |                                                                                          |                                                                                              |
|------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Workloads</b>       | HPC, HCI, Hybrid/private cloud                                       | HPC, HCI, Hybrid/private cloud                                                           | HPC, HCI, Hybrid/private cloud                                                               |
| <b>Form Factor</b>     | 2U 4-Node High Density Server                                        | 2U 4-Node High Density Server                                                            | 1U 2-Node High Density Server                                                                |
| <b>Processor</b>       | Dual AMD EPYC™ 9005/9004<br>per node                                 | Dual AMD EPYC™ 7003/7002<br>per node                                                     | Dual Intel® Xeon® 6 per node<br>(Intel Xeon 6900-series)                                     |
| <b>Memory</b>          | 96 x DDR5 RDIMM                                                      | 64 x DDR4 RDIMM/LRDIMM                                                                   | 48 x DDR5 RDIMM/MRDIMM                                                                       |
| <b>Networking</b>      | 8 x 1GbE LAN, 4 x MLAN                                               | 8 x 1GbE LAN, 4 x MLAN, 1 x CMC                                                          | 4 x 1GbE LAN, 2 x MLAN                                                                       |
| <b>Storage</b>         | 8 x 2.5" Gen4 NVMe/SATA/SAS<br>Optional 4 x M.2 slots (PCIe Gen4 x4) | 8 x 2.5" Gen4 NVMe/SATA/SAS<br>4 x M.2 slots (PCIe Gen4 x4)                              | 4 x 2.5" Gen5 NVMe/SATA/SAS4<br><small>*Storage card is required to support SATA/SAS</small> |
| <b>Expansion Slots</b> | 4 x LP PCIe Gen5 x16 slots<br>4 x OCP 3.0 Gen5 x16 slots             | 8 x LP PCIe Gen4 x16 slots<br>4 x OCP 3.0 Gen4 x16 slots                                 | 4 x LP PCIe Gen5 x16 slots                                                                   |
| <b>Power Supply</b>    | Dual 3000W Titanium                                                  | <a href="#">[ICU1]</a> Dual 2200W Platinum<br><a href="#">[ICP1]</a> Dual 3000W Titanium | Dual 3200W Titanium                                                                          |

# Immersion Cooling Server

## R284-A90-IAL1



## R284-SF0-IAL1



## R283-SF0-IAL1



|                        |                                                                                       |                                                                                     |                                                                                     |
|------------------------|---------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Workloads</b>       | Networking, Hybrid/private cloud                                                      | HPC, AI, ML, Networking, Cloud                                                      | HPC, AI, ML, Networking, Cloud                                                      |
| <b>Form Factor</b>     | 2U Rack Server                                                                        | 2U Rack Server                                                                      | 2U Rack Server                                                                      |
| <b>Processor</b>       | Dual Intel® Xeon® 6<br>(Intel Xeon 6900-series)                                       | Dual Intel® Xeon® 6<br>(6700E/6700P/6500P-series)                                   | Dual 5th/4th Gen Intel® Xeon® Scalable<br>Dual Intel® Xeon® CPU Max Series          |
| <b>Memory</b>          | 24 x DDR5 RDIMM/MRDIMM                                                                | 32 x DDR5 RDIMM/MRDIMM                                                              | 32 x DDR5 RDIMM                                                                     |
| <b>Networking</b>      | 2 x 1GbE LAN, 1 x MLAN                                                                | 1 x MLAN                                                                            | 1 x MLAN                                                                            |
| <b>Storage</b>         | 12 x 3.5"/2.5" Gen5 NVMe<br>2 x 2.5" SATA<br>2 x M.2 slots (PCIe Gen5 x4)             | 12 x 3.5"/2.5" Gen5 NVMe<br>1 x M.2 slot (PCIe Gen5 x4)                             | 12 x 3.5"/2.5" Gen5 NVMe/SATA/SAS4                                                  |
| <b>Expansion Slots</b> | 4 x FHHL PCIe Gen5 x16 slot<br>1 x LP PCIe Gen5 x16 slot<br>1 x OCP 3.0 Gen5 x16 slot | 4 x Dual slot Gen5 GPUs<br>1 x FHHL PCIe Gen5 x16 slot<br>1 x OCP 3.0 Gen5 x16 slot | 4 x Dual slot Gen5 GPUs<br>1 x FHHL PCIe Gen5 x16 slot<br>1 x OCP 3.0 Gen5 x16 slot |
| <b>Power Supply</b>    | Dual 2700W Titanium                                                                   | Dual 2700W Titanium                                                                 | Dual 2700W Titanium                                                                 |

## H173-Z80-IAS1



## R283-ZK0-IAL1



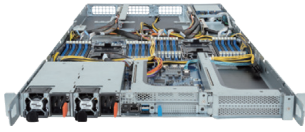
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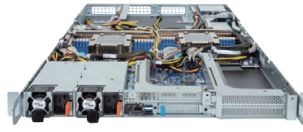
|                        |                                                                       |                                                                                     |                                                                                     |
|------------------------|-----------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Workloads</b>       | HPC, HCI, Hybrid/private cloud                                        | HPC, AI, ML, Data analytics                                                         | HPC, AI, ML, Data analytics                                                         |
| <b>Form Factor</b>     | 1U 2-Node High Density Server                                         | 2U Rack Server                                                                      | 2U Rack Server                                                                      |
| <b>Processor</b>       | Dual AMD EPYC™ 9005/9004<br>per node                                  | Dual AMD EPYC™ 9005/9004                                                            | Dual AMD EPYC™ 9005/9004                                                            |
| <b>Memory</b>          | 48 x DDR5 RDIMM                                                       | 48 x DDR5 RDIMM                                                                     | 24 x DDR5 RDIMM                                                                     |
| <b>Networking</b>      | 4 x 1GbE LAN, 2 x MLAN                                                | 2 x 1GbE LAN, 1 x MLAN                                                              | 1 x MLAN                                                                            |
| <b>Storage</b>         | 4 x 2.5" Gen5 NVMe/SATA/SAS4<br>Optional 2 x M.2 slots (PCIe Gen4 x4) | 8 x 2.5" Gen5 NVMe<br>4 x 2.5" SATA/SAS4<br>2 x M.2 slots (PCIe Gen3 x4/ x2)        | 8 x 3.5"/2.5" Gen5 NVMe/SATA/SAS4<br>4 x 3.5"/2.5" SATA/SAS4                        |
| <b>Expansion Slots</b> | 2 x LP PCIe Gen5 x16 slots<br>2 x OCP 3.0 Gen5 x16 slot               | 4 x Dual slot Gen5 GPUs<br>1 x FHHL PCIe Gen5 x16 slot<br>1 x OCP 3.0 Gen5 x16 slot | 4 x Dual slot Gen5 GPUs<br>1 x FHHL PCIe Gen5 x16 slot<br>1 x OCP 3.0 Gen5 x16 slot |
| <b>Power Supply</b>    | Dual 3200W Titanium                                                   | Dual 2700W Titanium                                                                 | Dual 2700W Titanium                                                                 |

# Immersion Cooling Server

R183-SF2-IAL1



R183-ZF2-IAL1



TO15-Z20-IA01

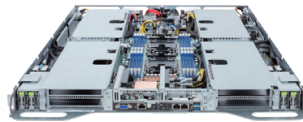


|                        |                                                                                                                                                         |                                                                                                                           |                                                                                     |
|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Workloads</b>       | HPC, AI, ML, Networking, Cloud                                                                                                                          | HPC, AI, ML, Networking, Cloud                                                                                            | HPC, AI, ML, Data analytics                                                         |
| <b>Form Factor</b>     | 1U Rack Server                                                                                                                                          | 1U Rack Server                                                                                                            | 10U ORv3 GPU Server                                                                 |
| <b>Processor</b>       | Dual 5th/4th Gen Intel® Xeon® Scalable<br>Dual Intel® Xeon® CPU Max Series                                                                              | Dual AMD EPYC™ 9005/9004                                                                                                  | Single AMD EPYC™ 9005/9004                                                          |
| <b>Memory</b>          | 32 x DDR5 RDIMM                                                                                                                                         | 24 x DDR5 RDIMM                                                                                                           | 12 x DDR5 RDIMM                                                                     |
| <b>Networking</b>      | 1 x MLAN                                                                                                                                                | 1 x MLAN                                                                                                                  | 2 x 10GbE LAN, 1 x MLAN                                                             |
| <b>Storage</b>         | 2 x 2.5" Gen5 NVMe/SATA/SAS-4                                                                                                                           | 2 x 2.5" Gen5 NVMe/SATA/SAS4<br>2 x M.2 slots (PCIe Gen3 x4)                                                              | 4 x 15mm E1.S NVMe<br>2 x M.2 slots (PCIe Gen5 x4)<br>Optional 2 x M.2 slots (SATA) |
| <b>Expansion Slots</b> | 4 x Dual slot Gen5 GPUs<br>1 x FHFL PCIe Gen5 x16 slot<br>1 x FHHL PCIe Gen5 x16 slot<br>1 x Internal LP PCIe Gen4 x8 slot<br>1 x OCP 3.0 Gen5 x16 slot | 4 x Dual slot Gen5 GPUs<br>1 x FHHL PCIe Gen5 x16 slot<br>1 x Internal LP PCIe Gen5 x16 slot<br>1 x OCP 3.0 Gen5 x16 slot | 4 x Dual slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots                               |
| <b>Power Supply</b>    | Dual 2700W Titanium                                                                                                                                     | Dual 2700W Titanium                                                                                                       | From 48V DC single busbar                                                           |

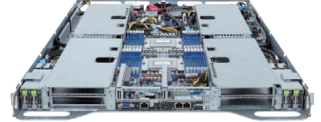
TO15-S40-IA01



TO15-S41-IA01



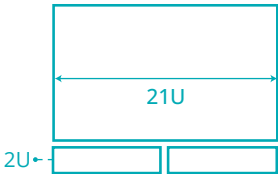
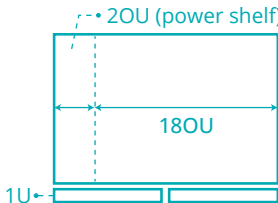
TO15-Z40-IA01



|                        |                                                                            |                                                                            |                                                       |
|------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------------------|-------------------------------------------------------|
| <b>Workloads</b>       | HPC, AI, ML, Data analytics                                                | HPC, AI, ML, Data analytics                                                | HPC, AI, ML, Data analytics                           |
| <b>Form Factor</b>     | 10U ORv3 GPU Server                                                        | 10U ORv3 GPU Server                                                        | 10U ORv3 GPU Server                                   |
| <b>Processor</b>       | Dual 5th/4th Gen Intel® Xeon® Scalable<br>Dual Intel® Xeon® CPU Max Series | Dual 5th/4th Gen Intel® Xeon® Scalable<br>Dual Intel® Xeon® CPU Max Series | Single AMD EPYC™ 9005/9004                            |
| <b>Memory</b>          | 24 x DDR5 RDIMM                                                            | 16 x DDR5 RDIMM                                                            | 24 x DDR5 RDIMM                                       |
| <b>Networking</b>      | 2 x 10GbE LAN, 1 x MLAN                                                    | 2 x 10GbE LAN, 1 x MLAN                                                    | 2 x 10GbE LAN, 1 x MLAN                               |
| <b>Storage</b>         | 4 x 15mm E1.S NVMe<br>Optional 2 x M.2 slots (SATA)                        | 4 x 15mm E1.S NVMe<br>Optional 2 x M.2 slots (SATA)                        | 4 x 15mm E1.S NVMe<br>Optional 2 x M.2 slots (SATA)   |
| <b>Expansion Slots</b> | 4 x Dual slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots                      | 8 x Single slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots                    | 4 x Dual slot Gen5 GPUs<br>2 x LP PCIe Gen5 x16 slots |
| <b>Power Supply</b>    | From 48V DC single busbar                                                  | From 48V DC single busbar                                                  | From 48V DC single busbar                             |



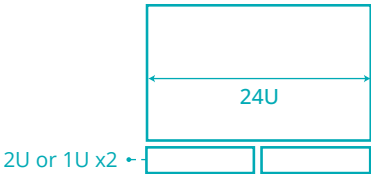
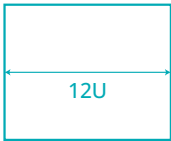
# Immersion Cooling Tank

| A1P0-EB0                                                                          |                                                                          | A1O3-CC0                                                                                                                |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
|  |                                                                          |                                      |
| Hardware Capacity                                                                 | 21U + 2U x 2 (EIA)                                                       | 180U + 20U (power shelf) + 1U x 2 (EIA)                                                                                 |
| Heat Dissipation Capacity                                                         | 80 kW with 25°C inlet water<br>60 kW with 35°C inlet water               |                                                                                                                         |
| Dimensions (L x W x H)                                                            | Tank: 0.91m x 1.16m x 1.49m<br>CDU: 0.86m x 0.48m x 1.62m                |                                                                                                                         |
| Weight                                                                            | Tank: 450 kg (w/o coolant); CDU: 325 kg                                  |                                                                                                                         |
| Coolant Volume                                                                    | 750 Liter (615 kg)                                                       |                                                                                                                         |
| Power Plug                                                                        | PDU: IEC 60309 63A-3P+N+E, 6H, Plug x2<br>CDU: IEC 60320 C19, Plug x1    | PDU: IEC 60309 32A-3P+N+E, 6H, Plug x1<br>Power Shelf: IEC 60309 63A-3P+N+E, 6H, Plug x1<br>CDU: IEC 60320 C19, Plug x1 |
| Input Power Spec                                                                  | 3P+N+E 63A, 380-415VAC, 50/60Hz x2<br>1P+N+E 15A, 220-240VAC, 50/60Hz x1 | 3P+N+E 32A, 380-415VAC, 50/60Hz x1<br>3P+N+E 63A, 380-415VAC, 50/60Hz x1<br>1P+N+E 15A, 220-240VAC, 50/60Hz x1          |
| Depth Supported                                                                   | 900 mm                                                                   |                                                                                                                         |
| Cooling Pipe Size                                                                 | 2" clamp fitting (Tube OD 50.8 mm / Flange OD 63.9 mm)                   |                                                                                                                         |
| Cooling Water Inlet                                                               | 20-35°C                                                                  |                                                                                                                         |
| Cooling Water Flow                                                                | 240 LPM                                                                  |                                                                                                                         |



▲ A1P0-EB0 / A1O3-CC0 Tank

# Immersion Cooling Tank

|                                  | A1P0-EE0                                                                          | A1P0-EA0                                                                            |
|----------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
|                                  |  |  |
| <b>Hardware Capacity</b>         | 24U + 2U x 2 (EIA)                                                                | 12U (EIA)                                                                           |
| <b>Heat Dissipation Capacity</b> | 80 kW with 25°C inlet water<br>50 kW with 35°C inlet water                        | 40 kW with 20°C                                                                     |
| <b>Dimensions (L x W x H)</b>    | Tank: 1.15m x 1.33m x 2m                                                          | Tank: 1.2m x 0.87m x 1.56m<br>Tank + Switch: 1.2m x 0.93m x 1.56m                   |
| <b>Weight</b>                    | 880 kg (w/o coolant)                                                              | 300 kg (w/o coolant)                                                                |
| <b>Coolant Volume</b>            | 900 Liter (1647 Kg)                                                               | 400 Liter (320 kg)                                                                  |
| <b>Power Plug</b>                | PDU: 100A-200-240/346-416Vac, 3PH, WYE                                            | PDU: IEC 60309 32A – 3P+N+E, 6H, plug x2                                            |
| <b>Input Power Spec</b>          | 3P+N+E 125A, 380-415VAC, 50/60Hz x2                                               | 3P+N+E 32A, 380-415VAC, 50/60Hz x2                                                  |
| <b>Depth Supported</b>           | 900 mm                                                                            | 900 mm                                                                              |
| <b>Cooling Pipe Size</b>         | 2" Pipe / PT 2" Female Thread                                                     | PT 1-1/4" Male Adaptor (Pipe OD 42.7 mm)                                            |
| <b>Cooling Water Inlet</b>       | 20-35°C                                                                           | 20-35°C                                                                             |
| <b>Cooling Water Flow</b>        | 200 LPM                                                                           | 100 LPM                                                                             |



▲ A1P0-EE0 Tank



▲ A1P0-EA0 Tank

# Immersion Cooling POC Tank



| 4U POC Tank         |                                          |
|---------------------|------------------------------------------|
| Hardware Capacity   | 4U (Supports server length up to 950 mm) |
| Cooling Power       | 7 KW                                     |
| Unit Size           | W1.0 x D1.2 x H1.35 m                    |
| Unit Weight         | 400 kg (w/o coolant)                     |
| Coolant Tank Volume | 185 Liter (151 kg)                       |
| Power Plug          | IEC 60309 32A – 3P+N+E, 6H, plug x1      |
| Input Power Spec    | 3P+N+E 32A; 380-415VAC; 50/60Hz          |
| Cooling Type        | dry cooler                               |

## Accessories and Coolants



| IT Lift                            |
|------------------------------------|
| Dimension: W1.15 x D0.85 x H1.53 m |
| Unit weight: 200 kg                |
| Lifting load: 70 kg                |
| Input AC: 100-240V~/ 3.5A, 50/60Hz |
| Power Plug: US ,10A, 125V          |



| IT Dry Rack                           |
|---------------------------------------|
| Dimension: W 1.23 x D 0.63 x H 1.25 m |
| Unit weight: 75 kg                    |
| Server depth supported: 900 mm        |
| Support space: 20 U or 20 OU          |
| Load capacity: 800 kg                 |



| Coolants                                                          |
|-------------------------------------------------------------------|
| SK Enmove: GC-5X                                                  |
| Shell: Immersion Cooling Fluid S3 X, Immersion Cooling Fluid S5 X |
| Exxon Mobil: SpectraSyn™ 6                                        |
| Chevron: SynFluid® PAO 4 cST                                      |



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