GPTrack.ai GH200 624GB Manual

Version 1.2 / August 2024

For the latest information and updates please see: https://gptrack.ai

Table of contents

Quickstart……...2
System specifications……2
Package Contents ……..3
System Rear I/O……4
Power Sub-System……5
BMC……...6
Firmware……6
Operating system……...6
Drivers……...7
Software……8
Nvidia Resources……...9

Quickstart:

Username and password for BMC:

Username: root
Password: 0penBmc (zero!!!)

Username and password for preinstalled OS (optional):

Username: x
Password: xz

1.) Install OS

Ubuntu Server for ARM: https://cdimage.ubuntu.com/releases/24.04/release/ubuntu-24.04-live-server-arm64+largemem.iso

2.) Install Drivers

curl -O https://us.download.nvidia.com/tesla/560.35.03/NVIDIA-Linux-aarch64-560.35.03.run

sudo apt install build-essential

sudo sh NVIDIA-Linux-aarch64-560.35.03.run

System specifications:

Nvidia GH200 Grace Hopper Superchip
72-core Nvidia Grace CPU
Nvidia H200 Hopper Tensor Core GPU
480GB of LPDDR5X memory with EEC
144GB of HBM3e memory
624GB of total fast-access memory
NVlink-C2C: 900 GB/s of bandwidth
Programmable from 400W to 1000W TDP (CPU + GPU + memory)
2x High-efficiency 2000W PSU
2x PCIe gen4 M.2 slots on board
2x PCIe gen5 2.5" drive slots (NVMe) without Bluefield-3
4x PCIe gen5 2.5" drive slots (NVMe) with Bluefield-3
3x FHFL PCIe Gen5 x16
1x USB 3.2 port (mini USB hub included: 1x USB 3.0, 2x USB 2.0)
2x RJ45 10GbE ports
1x RJ45 IPMI port
1x Mini display port
1x Micro USB port
Halogen-free LSZH power cables
Stainless steel cage nuts
Air-cooled 6x60mm fans

Rail kit
2U 440 x 88 x 900 mm (17.3 x 3.5 x 35.4")
34 kg (75 lbs)

TPM (optional, SPI mode)
ACPI compliance, S0, S5 support

System rating:
100-120Vac, 50/60Hz, 10A
200-240Vac, 50/60Hz, 10A

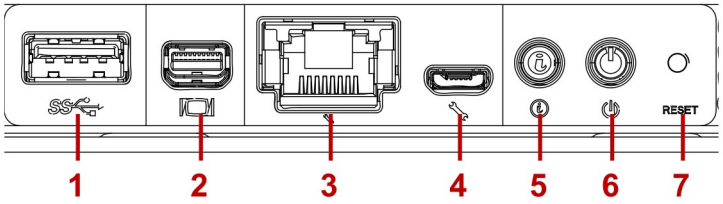
System management: IPMI v2.0 Compliant, on board "KVM over IP" support, Dedicated GbE management NIC port from PHY RTL8211FS to BMC

Operating environment:
Operating temperature: 0°C to 35°C (41°F to 95°F) at 1829M and up to
50°C at 0M. (No performance drop)
Non-operating temperature: -40°C to 70°C (-40°F to 158°F)
Operating relative humidity: 5% to 85%RH
Non-operating relative humidity: 50% to 93%RH

Package Contents

1x GH200 624GB system
2x Power cord
4x Cage nut
1x Rail kit

System Rear I/O

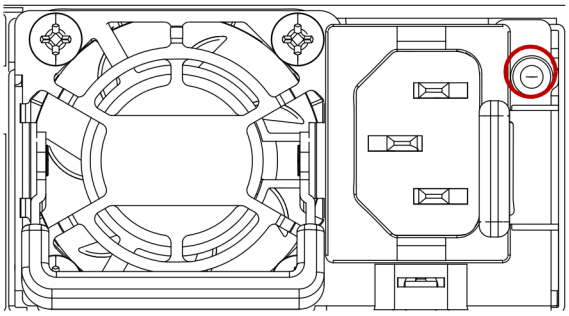


System Rear I/O

System Rear I/O Definition

No.	Icon	Name	Description
1	SS	USB 3.0 port	Connect to USB device **Note:** The USB device connected must be: No bigger than 17.7 mm (W) x 9.5 mm (H) to avoid interference with other ports.
2		Mini-DP connector	Maximum display resolution: 1920x1200 32bpp@60Hz (reduced blanking)
3		Dedicated NIC	Dedicated RJ45 connector
4		Micro USB port	Transmit in serial signal for debug or terminal concentrator
5		Location button/LED	Press to triggle on/off ID LED. Blue blinking - Identifier; Off - Normal.
6		Power button/LED	Press to power on the system. Press and hold for four seconds to power off the system. Blue blinking - System power off; On - System power on.
7		Reset button	Press to reset the system

Power Sub-System



PSU to Mainboard Module Description

Two power supply unit are supplied in the system. A secondary PSU is available for redundancy functionality.

Redundant AC Power Supply Units by Model

PSU	AC INPUT
(2) 2000W 73.5mm Platinum PSU	100-240VAC 50/60Hz, AC support

Power Supply Unit LED

PSU LED COLOR	DESCRIPTION
Green On	Output ON and OK
Green Blinking	AC present / Only VSB ON
Amber On	AC Lost; with a second PSU in parallel still with AC input power. PSU critical event causing a shutdown; failure, OCP, OVP, Fan Fail.
Amber Blinking @1Hz	PSU warning events where the PSU continues to operate; high temp, high power, high current, slow fan, UV.

BMC

How to connect to BMC:

Connect network cable to the dedicated IPMI port. Get the IP.

Open browser and enter IP: https://192.168.178.x

Standard username and password for BMC

username: root
password: 0penBmc (zero!!!)

Firmware Update

Download the firmware from https://gptshop.ai

Select update firmware in BMC to update (use tar file, do not extract).

Operating system

Standard username and password for preinstalled OS (optional):

username: x
password: xz

Install OS yourself:

Any ARM linux distribution with kernel > 6.5 should work just fine.

Example Ubuntu (standard):

Download the version you would like to have (64k kernel is highly recommended).

Ubuntu Server for ARM: https://ubuntu.com/download/server/arm

Intall with USB stick or over network via BMC (slower).

With older versions (not recommended) you might need to select the HWE kernel. Using the newest 64k kernel is highly recommended.

There are special Nvidia kernels for Ubuntu 22.04: linux-nvidia-64k-hwe

If you want to install a Nvidia kernel do it like this:

dpkg --list|grep linux-image

sudo apt purge linux-image-xxx (xxx = version number)

dpkg --list|grep linux-headers

sudo apt purge linux-headers-xxx (xxx = version number)

dpkg --list|grep linux-modules

sudo apt-get purge linux-modules-xxx (xxx = version number)

sudo apt update

sudo apt install linux-nvidia-64k-hwe-22.04-edge

sudo reboot

Drivers

There are two main ways to install the Nvidia drivers

1.) Via Nvidia driver installer

Download Nvidia GH200 drivers: https://www.nvidia.com/Download/index.aspx?lang=en-us

Select product type "data center", product series "HGX-Series" and operating system "Linux aarch64"

Copy the download url (may change with version and over time)

example:

curl -O https://us.download.nvidia.com/tesla/xxx/NVIDIA-Linux-aarch64-xxx.run (xxx = version number)

sudo apt install build-essential

sudo sh NVIDIA-Linux-aarch64-xxx.run -m=kernel-open (xxx = version number)

2.) Via package installer (example Ubuntu)

Check version if already installed:

cat /proc/driver/nvidia/version

List possible driver for install

For desktop:

sudo ubuntu-drivers list

or, for servers:

sudo ubuntu-drivers list --gpgpu

Automatic install (desktop):

sudo ubuntu-drivers install

Installing the drivers on servers

sudo ubuntu-drivers install --gpgpu

You will also want to install the following additional components:

sudo apt install nvidia-utils-xxx-server (xxx = version number)

Alternatively, manual driver installation (using APT)

sudo apt install nvidia-driver-xxx (xxx = version number)

Software

Nvidia CUDA

There are two ways to install the Nvidia CUDA

1.) Nvidia installation guide:

https://docs.nvidia.com/cuda/cuda-installation-guide-linux/contents.html

Downlad from:

https://developer.nvidia.com/cuda-downloads?target_os=Linux&target_arch=arm64-sbsa

2.) Via package intaller (example Ubuntu)

sudo apt install nvidia-cuda-toolkit

sudo apt install nvidia-cuda-dev (optional)

Nvidia resources

Official Nvidia GH200 Manual: https://docs.nvidia.com/grace/#grace-hopper

Official Nvidia Grace Manual: https://docs.nvidia.com/grace/#grace-cpu

Official Nvidia Grace getting started: https://docs.nvidia.com/grace/#getting-started-with-nvidia-grace