Datasheet

# NVIDIA IGX Thor Module and Boardkit

Enterprise-ready platform for physical AI.



NVIDIA IGX Thor Module and Boardkit

## Server-Class Performance at Edge

The NVIDIA IGX Thor™ platform unlocks real-time sensor processing and AI reasoning for physical AI agents with industrial-grade hardware, enterprise software, and functional safety. It's powered by the NVIDIA Blackwell architecture iGPU and an optional dGPU, delivering up to 5,581 FP4 TFLOPS of AI compute to effortlessly run multiple generative AI models at the edge. Compared to NVIDIA IGX Orin™, it provides up to 8x higher AI compute on iGPU, 2.5x higher AI compute on dGPU, and 2x better connectivity.

NVIDIA IGX Thor offers two production-ready systems—the NVIDIA IGX™ T5000 module and the NVIDIA IGX T7000 board kit—built for diverse physical AI applications with functional safety. The IGX T5000 module features an NVIDIA Blackwell-powered iGPU, a 14-core Arm Neoverse-V3AE CPU, a suite of accelerators, and flexible I/O for customization. The IGX T7000 board kit is a complete system, featuring a module, a Board Management Controller (BMC), and an NVIDIA ConnectX™-7 SmartNIC with 400GbE networking. You can also add an NVIDIA RTX PRO™ Blackwell dGPU—designed to accelerate customers' time to market. IGX Thor production systems use Transformer Engine and Multi-Instance GPU (MIG) support in the NVIDIA Blackwell architecture to deliver the performance to run multiple AI models with robust workload isolation. Functional Safety Island (FSI) inside the Thor SoC also enables advanced safety functions through the IGX software stack, ensuring reliable operation in mission-critical environments.

IGX Thor represents a new class of enterprise edge computers, purpose-built to power the next generation of industrial and medical edge applications. Leveraging the NVIDIA Blackwell GPU architecture, it excels at generative reasoning and multimodal sensor processing, supporting a broad range of generative AI models—from vision-language-action (VLA) models like NVIDIA Isaac™ GR00T N to popular LLMs and VLMs such as Cosmos™ Reason. To deliver a seamless cloud-to-edge experience, IGX Thor runs the NVIDIA AI Enterprise software stack and NVIDIA NIM™ for physical AI applications, including NVIDIA Isaac for robotics, NVIDIA Metropolis for visual AI agents, and NVIDIA Holoscan for sensor processing. Industrial safety AI agents can also be deployed at the edge using the NVIDIA Halos Outside-in Safety Agent Blueprint.

Our ecosystem of partners provides a complete range of carrier boards, design services, cameras, and sensors, along with AI and system software to speed solution development. They also support accelerating medical certifications (IEC 60601, 62304) and industrial functional safety certifications (ISO 26262, IEC 61508), helping you bring products to market faster and with confidence.

## Key Features

### NVIDIA IGX T5000 Module

- 2,560-core NVIDIA Blackwell architecture GPU with 96 fifth-generation Tensor Cores
- 14-core Arm® Neoverse®-V3AE 64-bit CPU
- 128 GB 256-bit LPDDR5X, 273 GB/s
- Functional Safety Island on the SOC
- Industrial-grade hardware

### NVIDIA IGX T7000 Boardkit

- 2,560-core NVIDIA Blackwell architecture GPU with 96 fifth-generation Tensor Cores
- 14-core Arm Neoverse-V3AE 64-bit CPU
- 128 GB 256-bit LPDDR5X, 273 GB/s
- Options to add RTX PRO Blackwell dGPU to enhance AI performance
- ConnectX-7 SmartNIC with 400GbE networking
- Board Management Controller
- Functional Safety Island on the SOC and Safety Microcontroller
- Industrial-grade hardware

With enterprise-level software, massive AI compute, and network security, IGX Thor is ideal for advancing medical imaging, surgical robotics, humanoid robotics, industrial AI automation, high-performance computing, and beyond. As an enterprise-ready platform, IGX Thor enables companies to focus on application development and accelerate the realization of AI's benefits.

**Technical Specifications**

| | NVIDIA IGX T5000 | NVIDIA IGX T7000 | |
|---|---|---|---|
| **dGPU Option** | **–** | **With NVIDIA RTX PRO 6000 Blackwell Max-Q Workstation Edition** | **With NVIDIA RTX PRO Blackwell 5000** |
| **AI Performance** | 2,070 TFLOPS (FP4-Sparse) | Up to 5,581 TFLOPS (FP4-Sparse) | Up to 4,293 TFLOPS (FP4-Sparse) |
| **iGPU** | 2,560-core NVIDIA Blackwell architecture GPU with 96 fifth-generation Tensor Cores | 2,560-core NVIDIA Blackwell architecture GPU with 96 fifth-generation Tensor Cores | 2,560-core NVIDIA Blackwell architecture GPU with 96 fifth-generation Tensor Cores |
| | Multi-Instance GPU with 10 TPCs | Multi-Instance GPU with 10 TPCs | Multi-Instance GPU with 10 TPCs |
| **iGPU Max Frequency** | 1.57 GHz | 1.57 GHz | 1.57 GHz |
| **dGPU** | **–** | 24,064-core NVIDIA Blackwell architecture GPU with fifth-generation Tensor Cores | 14,080-core NVIDIA Blackwell architecture GPU with fifth-generation Tensor Cores |
| **CPU** | 14-core Arm Neoverse-V3AE 64-bit CPU | 14-core Arm Neoverse-V3AE 64-bit CPU | 14-core Arm Neoverse-V3AE 64-bit CPU |
| | 64 KB I-cache, 64 KB dCache | 64 KB I-cache, 64 KB dCache | 64 KB I-cache, 64 KB dCache |
| | 1 MB L2 cache per core | 1 MB L2 cache per core | 1 MB L2 cache per core |
| | 16 MB shared system L3 cache | 16 MB shared system L3 cache | 16 MB shared system L3 cache |
| **CPU Max Frequency** | 2.6 GHz | 2.6 GHz | 2.6 GHz |
| **Vision Accelerator** | 1x PVA v3 | 1x PVA v3 | 1x PVA v3 |
| **Memory** | 128 GB 256-bit LPDDR5X | 128 GB 256-bit LPDDR5X \| 273 GB/s | 128 GB 256-bit LPDDR5X \| 273 GB/s |
| | 273 GB/s | 96 GB dGPU memory \| 1,792 GB/s | 48 GB dGPU memory \| 1,344 GB/s |
| **Storage** | Supports NVMe through PCIe | 4x SATA connectors | 4x SATA connectors |
| | Supports SSD through USB 3.2 | M.2 key M connector | M.2 key M connector |
| **Video Encode** | 2x NVEncode | 2x NVEncode (iGPU) | 2x NVEncode (iGPU) |
| | | 4x NVEncode (dGPU) | 3x NVEncode (dGPU) |
| **Video Decode** | 2x NVDecode | 2x NVDecode (iGPU) | 2x NVDecode (iGPU) |
| | | 4x NVDecode (dGPU) | 3x NVDecode (dGPU) |
| **PCIe** | Up to 8 lanes: Gen5 | 2x PCIe Gen5 (x8, x16) | 2x PCIe Gen5 (x8, x16) |
| | Root port only: C1 (x1) and C3 (x2) | | |
| | Root point or endpoint: C2 (x1), C4 (x8), and C5 (x4) | | |
| **USB** | xHCI host controller with integrated PHY (up to) | 1x USB 3.2 Type-C | 1x USB 3.2 Type-C |
| | 3x USB 3.2 | 4x USB 3.2 Type A | 4x USB 3.2 Type A |
| | 4x USB 2.0 | | |

**Technical Specifications**

| | NVIDIA IGX T5000 | NVIDIA IGX T7000 | |
|---|---|---|---|
| **dGPU Option** | – | **With NVIDIA RTX PRO 6000 Blackwell Max-Q Workstation Edition** | **With NVIDIA RTX PRO Blackwell 5000** |
| **Networking** | 4x 25GbE | 2x RJ45 (1GbE each)<br>2x QSFP28 (200GbE each) | 2x RJ45 (1GbE each)<br>2x QSFP28 (200GbE each) |
| **Integrated ConnectX** | No | Yes | Yes |
| **Display** | 1x shared HDMI 2.1<br>1x VESA DisplayPort 1.4a: HBR2, MST | 1x VESA DisplayPort 1.4a | 1x VESA DisplayPort 1.4a |
| **Other I/O** | 2x 13-pin CAN header<br>2x 6-pin automation header<br>2x 5-pin header JTAG connector<br>1x 4-pin fan connector: 12V, PWM, and tach<br>2x 5-pin audio panel header<br>2-pin RTC backup battery connector | 2x USB header for optional connection via cable<br>4x COM ports<br>1x LPT<br>1x TPM<br>1x CAN<br>1x GPIO<br>Audio line out, mic in | 2x USB header for optional connection via cable<br>4x COM ports<br>1x LPT<br>1x TPM<br>1x CAN<br>1x GPIO<br>Audio line out, mic in |
| **BMC** | – | Yes | Yes |
| **Safety Support** | Functional Safety Island on SoC | Functional Safety Island on SoC<br>Safety MCU on the carrier board | Functional Safety Island on SoC<br>Safety MCU on the carrier board |
| **NVDIA AI Enterprise Support** | Yes | Yes | Yes |
| **Power** | 40 W–130 W | 40 W–130 W TMP<br>Up to 300 W for dGPU | 40 W–130 W TMP<br>Up to 300 W for dGPU |
| **Mechanical** | 100 mm x 87 mm<br>699-pin B2B connector<br>Integrated thermal transfer plate (TTP) with heat pipe | 243.84 mm x 198.98 mm x 31.05 mm | 243.84 mm x 198.98 mm x 31.05 mm |

## Ready to Get Started?

To learn more about the NVIDIA IGX Thor, visit nvidia.com/igx-thor

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