



CSA1-N8 Power Server

BM1684X

BM1684



V1.1 2025-10-29

T-CHIP INTELLIGENCE TECHNOLOGY

Product features



8 computing nodes, providing strong computing power

The server comes with 8 built-in distributed computing nodes, with the option of SOPHON BM1684X or BM1684. A single node can deliver 32 TOPS or 17.6 TOPS of computing power, and the quantity of the 8 computing nodes is configurable.



256 channels of video AI processing capabilities

It supports AI processing of 256 video streams (the specific processing performance varies depending on the specifications of the core board and the type of AI model running), and has powerful multi-task concurrent processing capabilities, which can be widely used in AI application scenarios such as intelligent security and edge computing.



Supports the private deployment of large language models

It supports the privatization deployment of large models such as mainstream language models (Gemma, Llama, Qwen), large visual models (EfficientViT, SAM, TAM), and image generation models (Flux, Stable Diffusion).



Supports a variety of deep learning frameworks

Support traditional network architectures such as CNN, RNN, LSTM, etc. Supports multiple deep learning frameworks such as TensorFlow, PyTorch, PaddlePaddle, ONNX, Caffe, etc., and supports custom operator development.

Product features



Supports 3.5-inch SATA3.0 HDD/SSD

Configure a 3.5-inch (or 2.5-inch) hard drive bay and support SATA3.0 HDD/SSD hard drive expansion, allowing the device to easily expand to terabytes of ultra-large capacity, and support hot-swappable quick replacement to meet one-stop deployment needs such as file management, data backup, and video surveillance.



Secure and high-speed network communication

Equipped with dual 10G SFP+ network interfaces and dual 1000Mbps Ethernet ports, it features a high-speed and stable network communication method, meeting the requirements of different application scenarios such as high bandwidth.



Equipped with BMC management system

Equipped with BMC intelligent management system, it can easily complete real-time monitoring, software configuration, hardware management, troubleshooting, system upgrade, and can provide secondary development.



Standard 1U rack server

High-density integration and compact deployment method; featuring a standard 1U rack server chassis design, it offers flexible deployment, perfectly fits most types of cabinets in data centers, and has a robust structure.

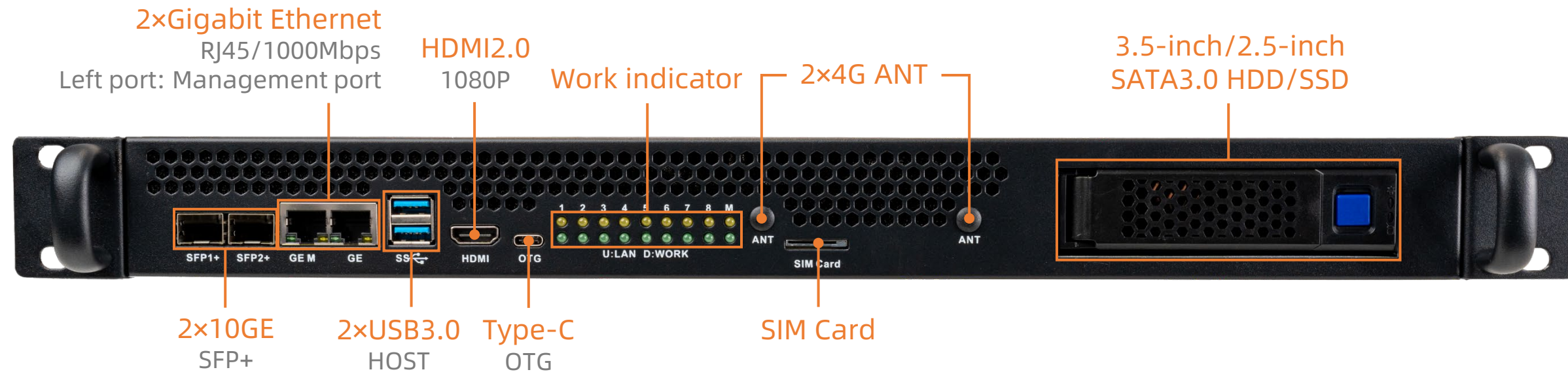
Specifications



		BM1684X	BM1684
Technical Specifications	Product model	CSA1-N8S1684X	CSA1-N8S1684
	Server form	1U rack-mounted computing power server	
	Architecture	ARM architecture	
	Number of nodes	8 distributed computing nodes + 1 control node	
	Compute nodes	Octa-core 64-bit processor BM1684X, up to 2.3GHz	Octa-core 64-bit processor BM1684, up to 2.3GHz
	Video encoding	H.265&H.264: 3×4K@25fps, 12×1080P@25fps	H.265&H.264: 2×1080P@25fps
	Video decoding	H.265&H.264: 8×4K@25fps, 32×1080P@25fps H.265: 1×8K@25fps	H.265&H.264: 32×1080P@30fps
	Control nodes	Octa-core 64-bit processor RK3588S, main frequency up to 2.4GHz, the highest computing power is 6TOPS	
	AI computing power	256TOPS (32T × 8, INT8)	140.8TOPS (17.6T × 8, INT8)
	RAM	16GB LPDDR4/LPDDR4X × 8	12GB LPDDR4/LPDDR4X × 8 (12GB/16GB Optional)
	Storage	64GB eMMC × 8 (64GB/128GB Optional)	32GB eMMC × 8 (32GB/256GB Optional)
	Storage expansion	3.5-inch/2.5-inch SATA3.0 SSD hard drive slot × 1 (Supports hot swapping; BMC can directly operate the hard drive, and computing child nodes can indirectly access the hard drive through the network sharing method provided by BMC)	
	Power consumption	Normal: 300W, Max: 430W	Normal: 170W, Max: 350W
	Fan module	6 high-speed cooling fans	
Physical Specifications	Size	490.0mm(L) × 417.3mm(W) × 44.4mm(H)	
	Installation requirements	IEC 297 Universal Cabinet Installation: 19 inches wide and 800 mm deep and above Retractable slideway installation: The distance between the front and rear holes of the cabinet is 543.5mm~848.5mm	
	Full weight	Server net weight: 6.7kg, total weight with packaging: 8.9kg	
	Environment	Operating Temperature: 0°C ~ 42°C, Storage Temperature: -40°C ~ 60°C, Operating Humidity: 20% ~ 80%RH (non-condensing)	
Software Specifications	BMC	The BMC management system is integrated with the web-based management interface, supporting Redfish, VNC, NTP, monitoring advanced and virtual media, and the BMC management system can be redeveloped	
	Large language models	BM1684X: Support the privatization of ultra-large-scale parametric models under the Transformer architecture, such as Deepseek-R1 series, Gemma series, Llama series, ChatGLM series, Qwen series, Phi series and other large language models	
	Visual large model	BM1684X: Support the privatization deployment of large visual models such as ViT, Grounding DINO, SAM, etc.	
	AI Painting	BM1684X: Support the private deployment of Flux, Stable Diffusion, and Stable Diffusion XL image generation models	
	Deep learning	All models: Support traditional network architectures such as CNN, RNN, LSTM, and support various deep learning frameworks such as TensorFlow, PyTorch, PaddlePaddle, ONNX, and Caffe. Support custom operator development and Docker containerization management technology	
Interface Specifications	Internet	2 × 10G Ethernet (SFP+), 2 × Gigabit Ethernet (RJ45, 1 management network port, 1 ordinary network port)	
	Display	1 × HDMI2.0 (Maximum resolution 1080P, main processor core board display)	
	USB	2 × USB3.0 HOST, 1 × Type-C (USB3.0 OTG, processor core board debugging)	
	Others	1 × SIM Card, 2 × 4G antenna	

Interface description

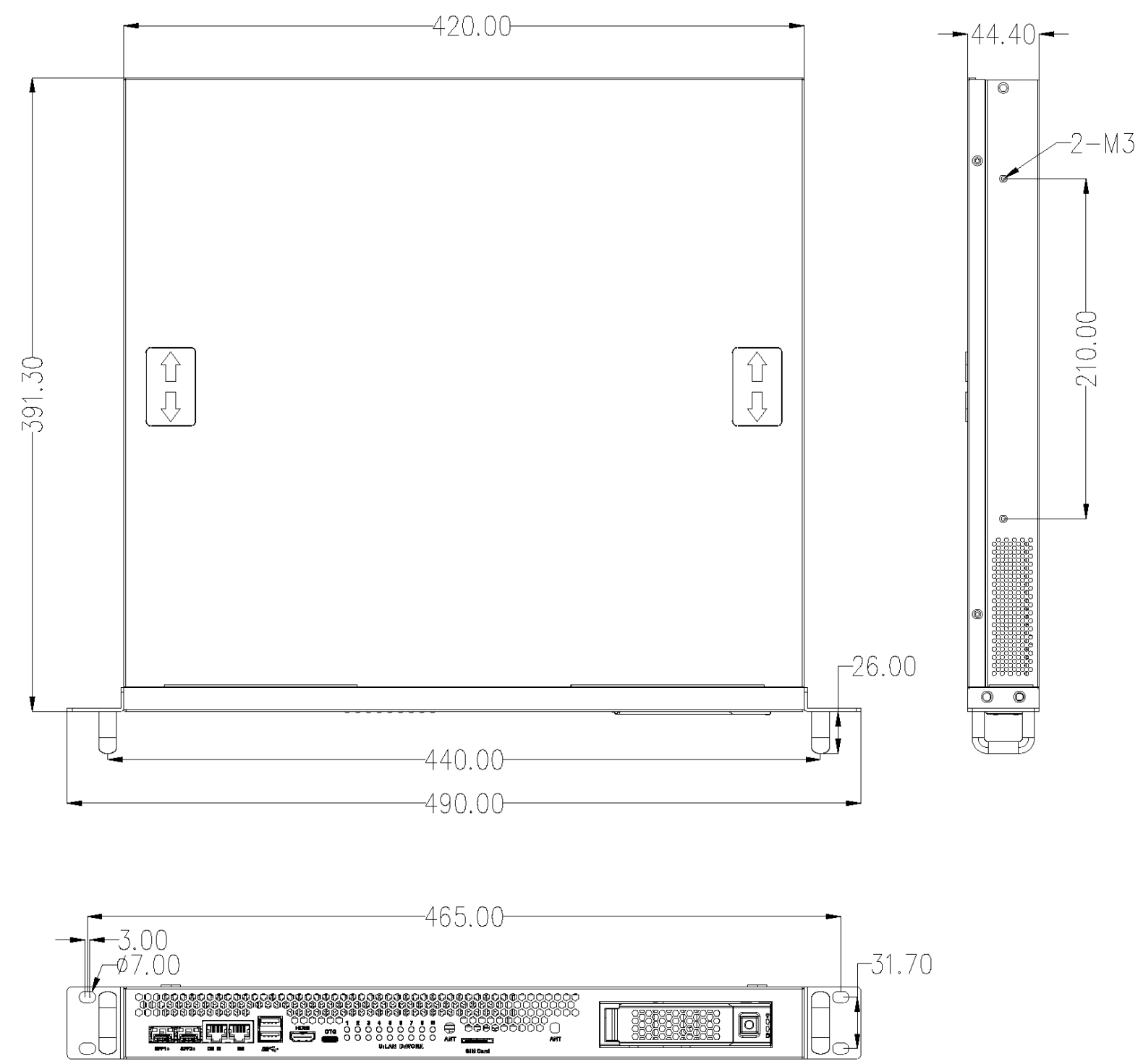
Front view



Rear view



Dimension





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