Datasheet

EEP-500T EDGE AI BOX

Built for Physical AI, Driving the Next Generation of Robotics

Introduction

Emplus EEP-500T is a high-performance Edge AI system powered by the NVIDIA® Jetson AGX Thor T5000 module. It is purpose-built for robotic dogs, humanoid robots, autonomous mobile robots (AMRs), and industrial automation systems requiring advanced AI processing in mission-critical environments.

The platform delivers exceptional AI compute performance with optimized power efficiency, enabling reliable autonomous operation under demanding conditions. Its architecture is engineered to support real-time perception, inference, and control workloads within a compact and deployment-ready system.

Featuring a rich and flexible I/O design, the EEP-500T enables seamless integration with stereo depth cameras, acoustic cameras, LiDAR, and a wide range of industrial sensors. This comprehensive connectivity supports multi-sensor fusion and deterministic system control, facilitating scalable and stable robotic and automation deployments.

As the centralized intelligence core of robotic systems, the EEP-500T consolidates perception processing, decision-making algorithms, and task execution logic into a unified computing platform. Its compute capability and system architecture directly contribute to overall system performance, reliability, and adaptability, providing a robust foundation for next-generation robotics and AMR applications.

Key Features

Processing

- NVIDIA® Jetson AGX Thor T5000 module
- Up to 2070 TFOPS AI performance
- Optimized for high-throughput perception, inference, and control workloads

Interfaces

- 4 × USB 3.2 ports for stereo HD cameras; Scalable to support higher resolutions
- 5 × 2.5GbE ports for LiDAR, EtherCAT, SoundCAM or high-bandwidth Ethernet devices
- 1 × HDMI & 2 × DP display ports
- Serial interfaces (RS232/485/422)
- WiFi 6E 2.4/5GHz dual band
- Optional LTE / 5G connectivity
- CAN bus with RJ45
- DIDO (Digital-In / Digital-Out)
- Optional GMSL camera interface

Mechanical

- Integrated VC for CPU heat dissipation
- Active cooling support (FAN) for sustained high-performance operation

Software & Ecosystem Support

- NVIDIA ROS 2 and NVIDIA Isaac platform
- EtherCAT support
- Real-time Linux support
- 3rd-party EtherCAT framework integration

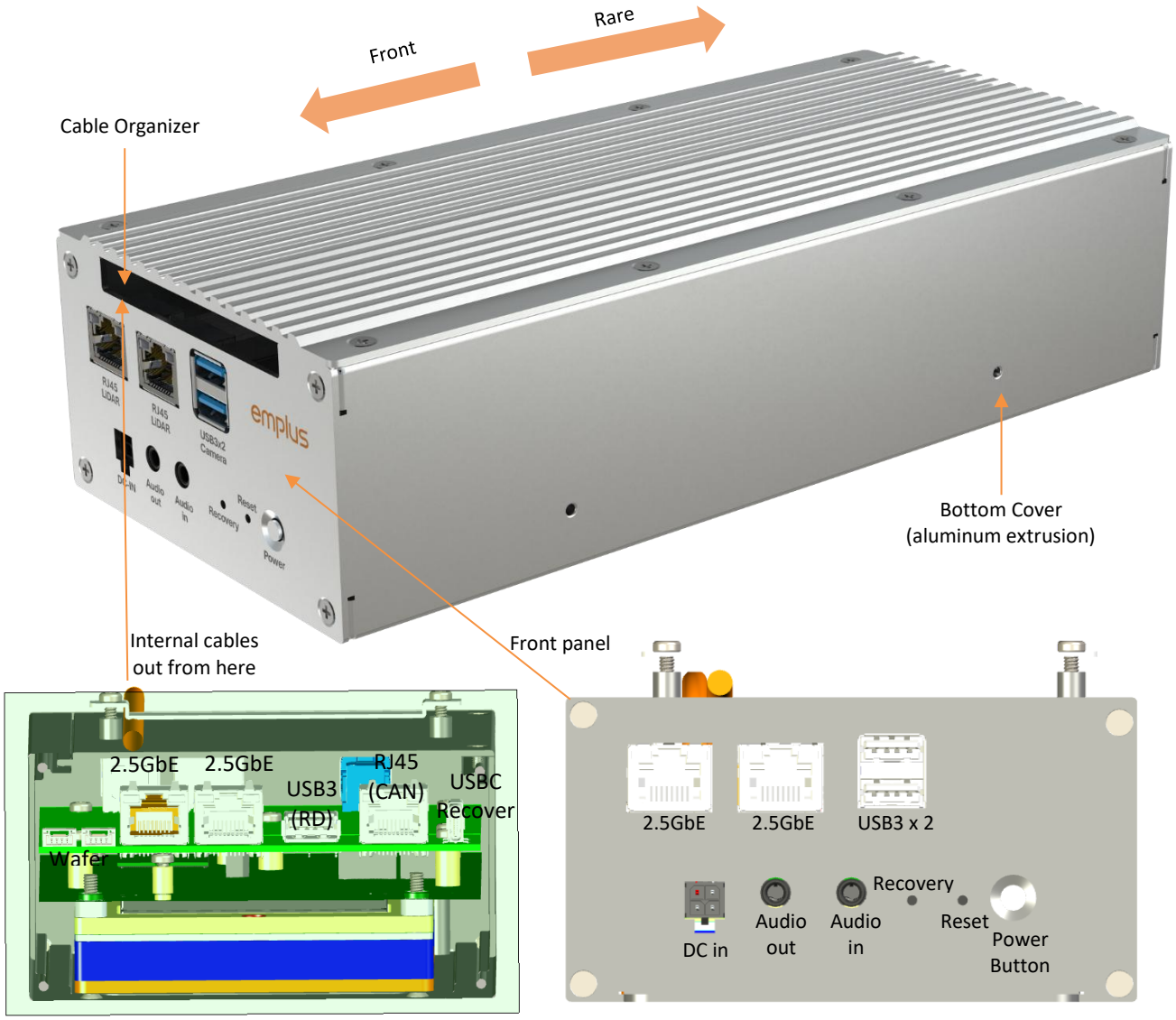
Technical Specification

The table below is a preliminary edge AI box specifications

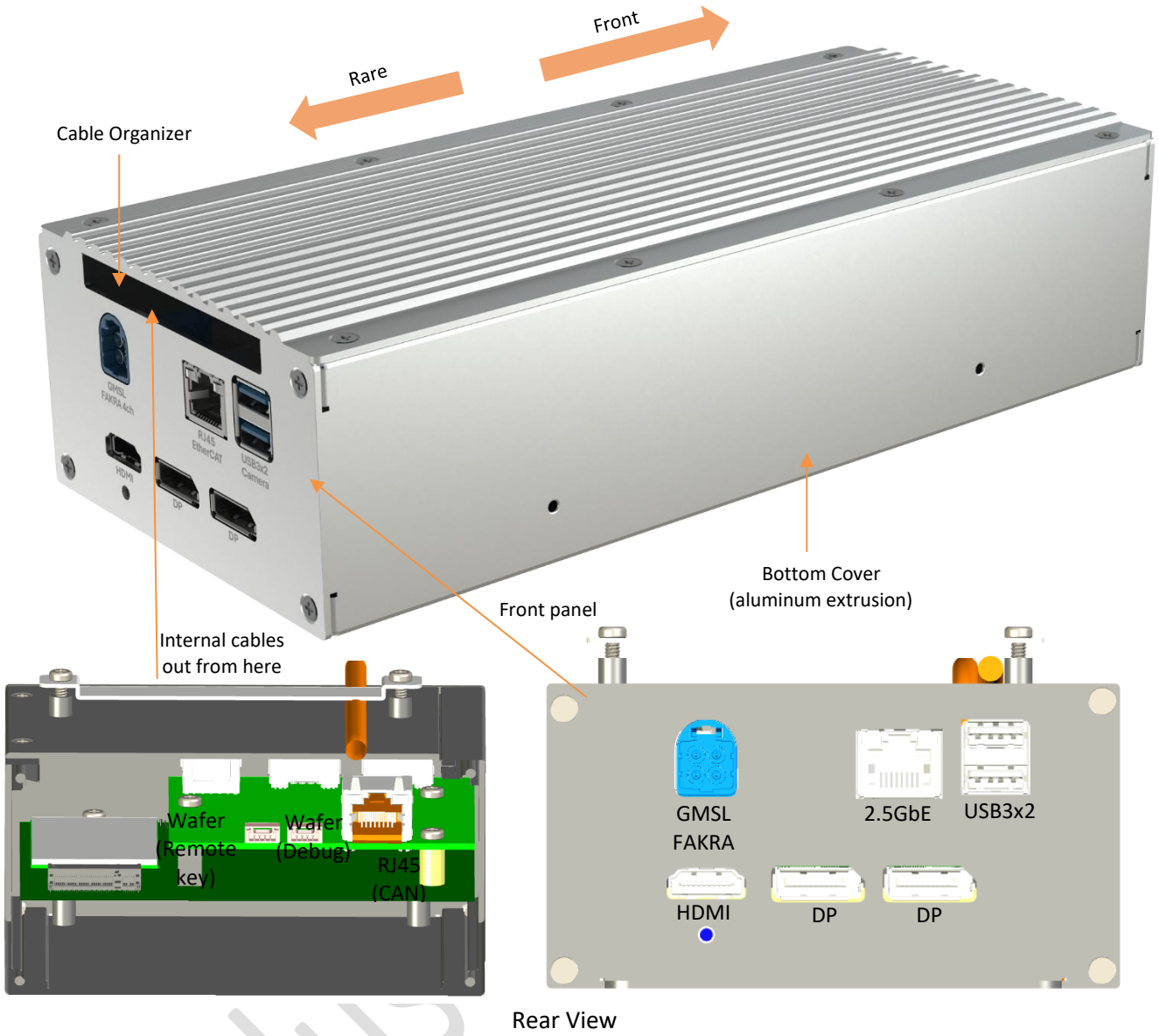
Category		Specifications
Model	Name	EEP-500T
Platform	SoC/SOM	NVIDIA® AGX Thor™ T5000
	CPU	14-core Arm® Neoverse®-V3AE 64-bit CPU
	GPU	2560-core NVIDIA Blackwell architecture GPU with 96 5th-gen Tensor Cores
	AI Performance	Up to 2070 TFLOPS (FP4—Sparse)
	Video Processor	Encode: 6x4Kp60, 24x1080p60 (H.265) Decode: Up to 40x1080p60 HEVC (H.265)
	RAM	128GB LPDDR5
Storage		NVMe gen4 SSD, default 1TB
TPM		TPM2.0
Expansion (PCBA)	M.2	1 x M.2 M key 2280 1 x M.2 E key 2230 1 x M.2 B Key 2280
Camera		Optional 4 x channels GMSL
I/O interface (external)	Display	1 x HDMI 1.4 Type A lockable 2 x DP1.4a
	USB	4 x USB3.2 Gen1 Type A 1 x USB2.0 Type C for recovery
	Ethernet	5 x RJ45 2.5GbE Ethernet ports
	CAN	2 x RJ45 for 2 x CAN Bus
	Serial/DIDO	1 x Serial for RS232/422/485, wafer 4 x DI, 8 x DO, wafer
	SIM slot	Optional 1 x nano/4FF SIM slot
	Antenna	N/A (antenna connectors on the integrated modules)
	Power Buttons	Power on/off
	Reset	Keyhole
	Recovery	Keyhole
	LEDs	2 x LEDs: system / status
	Audio/MIC	2 x 3.5mm Audio Jacks for in & out
Wireless Connectivity	Wi-Fi	Optional WiFi6E 2.4/5/6GHz with BT5.4
	4G/5G	(Optional) LTE or 5G modules
Others	RTC Battery	CR2032 RTC Battery
	FAN Connector	1 x 4-pin PWM header (12V)
Power	DC Input	24V to 48V, Micro-fit 4-pin
Fan		External fan
Mechanical	Dimension	253 x 113 x 60 mm
	Weight	TBD
	Mount	Wall mount
Environment	Operation Temperature	-20℃ ~ +50℃ with fan
	Storage Temperature	-40℃ ~ +85℃
	Storage Humidity	5%~95% 40°C (non-condensing)

Software	OS	Jetson Linux r38.x (NVIDIA® JetPack 7.0)
	EtherCAT	• Real-time Linux supported • 3rd party EtherCAT framework integration

Mechanical



Front View

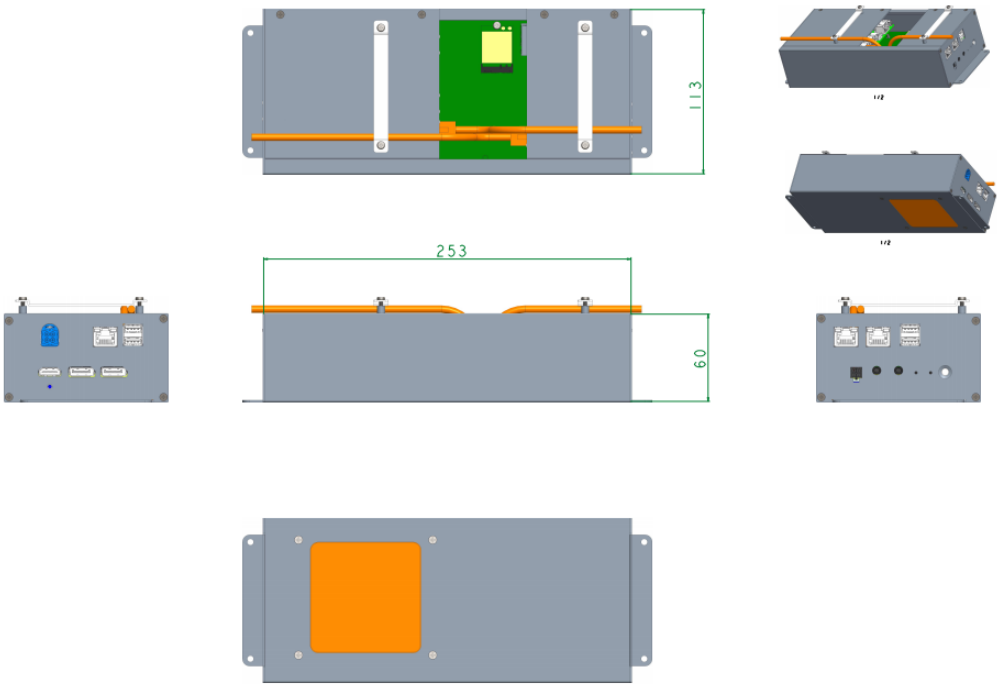


Rear View

(Preliminary mechanical concept and subject to change)

- **Dimension**

Preliminary dimension is 253 x 113 x 60mm (vs EVK 243.19 mm x 112.40 mm x 56.88 mm)



Software Architecture