BRYCK AI®

Revolutionary AI & Storage Performance, Scalability, Efficiency & Security for every EDGE

Meet BRYCK AI, an Order-of-Magnitude Leap in Accelerated Edge AI Computing

Introducing the future of Edge AI, TSECOND's state-of-the-art hardware and software solution: BRYCK AI, designed to empower businesses to harness the full potential of Artificial Intelligence at the Edge and solve their big data challenges, outperforming competitors and leading the market with unique features and unparalleled performance.

BRYCK AI® Solves Edge Inferencing Challenges

- **Unmatched Edge AI Performance**
  Optimizes AI inference at the Edge, where data is generated. Removes data center and Cloud dependencies. Leverages advanced AI Processing units powered by the latest AI Accelerators, offering superior performance/Watt. Achieves lightning-fast inference times for real-time applications.
- **Integrated High-Speed Data Storage**
  Capture, process, move and store large amounts of data. High-capacity NVMe SSDs are integrated directly with compute, delivering seamless data handling and fast data read/write speeds, reducing latency and enhancing overall performance of Edge AI applications.
- **Scalable & Flexible**
  BRYCK's modular design, easily scales up to meet growing processing and data requirements. Flexibly integrates with existing edge deployments.
- **Comprehensive Software Suite**
  Fully compatible with popular AI frameworks, BRYCK AI software includes pretrained models and algorithms optimized for edge performance.
- **Robust Security**
  Eliminate data security, privacy, governance, and compliance risks associated with traversing a network. Advanced encryption ensures data security and privacy, and protects devices and software from unauthorized access.
- **Energy Efficiency**
  Designed to deliver high performance while maintaining energy efficiency, providing sustainable operation that is ideal for environments where power, cooling and space are limited or variable.

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Technical Specification

AI

- Performance: Up to 1,664 TOPS
- Frame rate: Up to 156,000 FPS
- Latency: Less than 4.7 ms
- Energy Efficiency: 10.4 TOPS/W
- Model Precision: INT8
- AI SDK: Pre-trained Models, Compiler
- Frameworks: TensorFlow, TensorFlow Lite, Keras, PyTorch & ONNX

DATA STORAGE

- Up to 512 TB
- Up to 20 GB/s data access throughput
- Up to 8x storage capacity with data de-duplication

PORTABILITY

- Rugged and portable
- Shock-resistant
- Lightweight: 14 pounds
- Compact: 4"x4"x9.5"
- 1-BRYCK AI or 2-BRYCK AI access per server
- Temperature:
  Operating: 0°C to 85°C
  Non-operating: -40°C to 85°C
  Power consumption:
  240 - 320 W (AI)
  240 - 800 W (AI+DATA)

DATA SECURITY

- AES 256-bit data encryption
- Tamper-resistant
- Hardware encryption
- Automated key management

DATA ACCESS

- NFS | SMB | BRYCKCP | SRT
- Direct attached I/O
- Rapid data transfer
- Data Protection
- Self-healing
- Auto data corruption recovery
- Data protection from hardware component failure

MANAGEMENT

- Web Dashboards
- REST API for orchestration

BRYCK AI®

BRYCK AI® Platform

BRYCK AI seamlessly integrates cutting-edge AI processing capabilities with high-speed data storage, providing a modular platform that caters to the demands of modern applications, whether in healthcare, smart cities, or retail. Delivering top-tier performance, reliability and efficiency, this Edge AI hardware and software solution leads the market, providing superior performance, flexibility and integrated highspeed storage, and setting it apart from competitors. Experience the next level of edge AI with BRYCK AI.

BRYCK AI® Platform Features

- **UNIQUE EDGE AI PLATFORM WITH INTEGRATED STORAGE AND AI COMPUTING**
  AI processing hardware and software are integrated with the BRYCK storage platform.
- **BRYCK AI HARDWARE**
  A transparent extension to BRYCK storage hardware, BRYCK AI contains both the NVME and AI chips, connected to the same PCIe bus.
- **BRYCK AI SOFTWARE**
  BRYCK AI is delivered with an advanced AI software stack, including inferencing and model compiling SDKs. Models run at the edge, accessing data directly from BRYCK storage. Edge data written to the BRYCK storage can be processed by AI software immediately and automatically.
- **FLEXIBLE AI COMPUTE TOPS CONFIGURATION FOR VARIED USE CASES**
  Configurable ratio of AI computing & storage. BRYCK AI TOPS performance is configurable at build time.
- **REAL-TIME, HIGH-SPEED AI PROCESSING OF LARGE DATA**
  Data and AI processors connect to the same PCIe Bus within the BRYCK AI, accelerating the AI processors' access to data through high-speed BRYCK storage APIs. No network traffic is required for AI processing and data access.
- **CAPTURES DATA AND PERFORMS AI PROCESSING WITHIN A SINGLE SYSTEM**
  AI processing is performed locally without traversing a network to access or relocate data.
- **TRANSPARENTLY EXTEND AI CAPABILITIES TO EXISTING EDGE SYSTEMS**
  Attached as a PCIe device or a Network device.
- **PROVIDES AI CAPABILITIES TO ALL TYPES OF EDGES**
  Deployable at disconnected Edges, static or mobile, even in the most stringent or challenging environments.
- **HIGH-PERFORMANCE RUGGED AND PORTABLE**
  Small form factor, water-resistant, shockproof, transportable, plug & play.
- **VARIABLE RAW STORAGE CAPACITY**
  128 TB, 256 TB or 512 TB
- **RUGGED TRAY SYSTEM**
  Deployable in datacenters, static and mobile edges
- **TWO AVAILABLE TRAY CONFIGURATIONS**
  Single and dual BRYCK AI deployments are available, with the same form factor.
- **HIGH-PERFORMANCE STORAGE SERVER**
  BRYCK AI can optionally be delivered with an AMD/Intel-based high-performance edge server with PCIe Gen4 architecture. Or customers can use their existing edge servers.
- **PHYSICAL DATA PORTABILITY**
  Enables customers to transport data physically using DataDart or common shipping methods.
- **SELF-HEALING BRYCK FILE SYSTEM**
  BRYCK's self-healing file system automatically detects, corrects errors and provides end-to-end data consistency.
- **DATA STORAGE EFFICIENCY**
  Provided advanced data de-duplication algorithms can enable storing up to 8x the raw storage capacity of the BRYCK AI.
- **AUTOMATED ENCRYPTION KEY MANAGEMENT WITH AWS KEY MANAGEMENT SERVICE (KMS)**
  Manage the encryption keys of all BRYCK AI in a deployment automatically.
- **ALERTS AND LOGS**
  BRYCK AI software continually monitors the state of the device, delivering clear alert and event logging.
- **DATA PROTOCOLS**
  Data can be accessed over NFS, SMB and S3.

BRYCK AI®

Conquering the Edge Inferencing Challenge

BRYCK AI® Variants

BRYCK AI Platform	BRYCK AI Max	BRYCK AI XL	BRYCK AI Plus	BRYCK AI
AI Performance (TOPS)	1,664	832	416	208
FPS	156,000	78,000	39,000	19,500
Storage Capacity	-	64TB, 128TB, 256TB	96TB, 192TB, 384TB	448TB
Latency	4.7 ms			
Precision	INT8			
AI Data Processing	20GB/s			
Energy Efficiency	10.4 TOPS/W | 1128 FPS/W			
AI Frameworks	TensorFlow, TensorFlow Lite, Keras, PyTorch, ONNX ML formats supported			

Technical Specification

PCIe Generation	All models Support PCIe Gen 4.0 and are 3.0 Backwards compatibility
Connector Interface	Rugged – high durability connectors capable of PCIe Gen 4.0 Signaling
Dimensions (L x D x H)	9.5" x 4.0" x 4.0"
Weight	14 lbs
Power Consumption	800 W
Encryption	256 Bit encryption supported
System Monitoring	**Default** – Internal module board temperature monitoring **Optional** - IPMI System monitoring Dynamic Health monitoring of the internal Flash drives

ENVIRONMENTAL SPECIFICATIONS

Operating

Temperature: 0°C to 85°C

Humidity: 10-90% Relative Humidity

Altitude: 0-10,000 Feet Above Sea Level

Non-Operating (Storage)

Temperature: -40°C to 85°C

DESIGNED TO CONFORM TO AGENCY REGULATIONS

FCC Class A

CE Safety & Emissions

UL, cUL

RoHS3

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Tray

The Tray is a 4U rack-mountable and airborne-deployable rugged system. The Tray functions as an adaptor, bridging the BRYCK AI and the storage server via two high-throughput, direct-attached, high-speed PCIe 4.0 x16 cables. The Tray features a simple latch mechanism for easy insertion/removal of the BRYCK AI, ensuring that it is operational in high vibration environments.

Technical Specification

HARDWARE SPECIFICATION

Model	TR-4U1B	TR-4U2B
BRYCK Holding Capacity & Support	1x BRYCK AI 1x BRYCK AI back plane	2x BRYCK AI 2x BRYCK AI back plane
PCIe Generation	PCIe Gen 4.0 PCIe Gen 3.0 (Backward compatbility)	PCIe Gen 4.0 PCIe Gen 3.0 (Backward compatbility)
Connectivity/Ports	8x SFF-8654 1x RJ45 1GbE (IPMI Management)	8x SFF-8654 1x RJ45 1GbE (IPMI Management)
Form Factor	4U Rack Mountable	4U Rack Mountable
Dimensions (W x H x D)	10.7" x 7.0" x 18.5"	17.2" x 7.0" x 18.5"
Weight	Empty - 25 lbs With BRYCK - 39 lbs	Empty - 38 lbs With Single BRYCK - 52 lbs With Dual BRYCK - 66 lbs
Power Options	2x PSU @ 1600W (Dual Redundancy CRPS Formfactor)	2x PSU @ 2600W (Dual Redundancy CRPS Formfactor)
System Monitoring	**Default** – Automatic/dynamic temperature-based fan speed control **Optional** - IPMI System monitoring	**Default** – Automatic/dynamic temperature-based fan speed control **Optional** - IPMI System monitoring
Cooling	Redundant fans	Redundant fans
Fan Filters	Optional Quadra-foam 45 PPI Replaceable Fan Filters	Optional Quadra-foam 45 PPI Replaceable Fan Filters

ENVIRONMENTAL SPECIFICATIONS

Operating

Temperature: 0°C to 60°C

Humidity: 10-90% Relative Humidity

Altitude: 0-10,000 feet above sea Level

Non-Operating (Storage)

Temperature: -40°C to 70°C

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