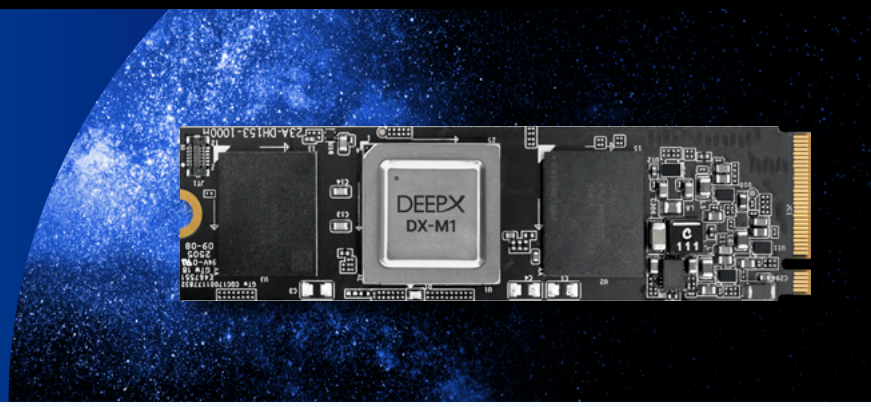
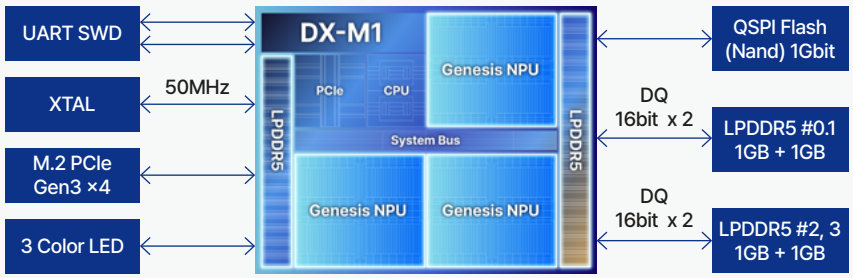
# DX-M1 M.2 LPDDR5×2 for Every AIoT

The DEEPX DX-M1 M.2 module brings server-grade AI inference directly to edge devices. Delivering 25 TOPS of performance at just 2-5W, the module achieves 20x better performance efficiency (FPS/W) than GPGPUs while maintaining GPU-level AI accuracy.




**"Integrating powerful AI vision processing and essential core features into a single chip, DEEPX drives innovative edge AI solutions for diverse intelligent systems."**

## DX-M1 M.2 LPDD5Rx2: Functional Block Diagram




## Specifications

| Feature | AI Accelerator | Details |
|---|---|---|
| Processor | INT8 Performance | 25 TOPS (=200 eTOPS / INT8) |
| Signal Interface | PCI Express | PCIe Gen.3 ×4 / Bandwidth: 4GB/s<br>*Compatible to PCIE x1 |
| Power | Power Consumption | 2W min., 5W max. for DEEPX supported models |
| Operating | Temperature | -25 ~ 85°C (Throttling)<br>-25 ~ 65°C (Non_Throttling) |
| Environment | Humidity | 40 °C @ 85% relative humidity (non-condensing) |
| Thermal Solution | Cooling | Heatsink (Option) |
| Physical | Form Factor | M.2 2280 (Key M) |
| | Dimensions | 22mm x 80mm x 4.1mm |
| | Power Range | 3.3V ± 5% |
| Software Support | Windows | Windows 11, 10 64 bit |
| | Linux | Ubuntu 22.04, 20.04 LTS<br>Support Yocto Project and Docker |
| | Framework | Support TensorFlow, TensorFlow Lite, ONNX, Keras, PyTorch by Dataflow complier converted |
| System Support | CPU Platform | x86, ARM Based Architecture |

DEEPX

## Key Features

> Type: AI Accelerator
> Form Factor: M.2 M Key (22 × 80 mm)
> Interface: PCIe Gen.3 ×4
> Memory: 4GB LPDDR5, QSPI 1Gbit NAND Flash
> Host HW: x86, ARM Based Architecture

## Support DXNN® SDK

DXNN® SDK is a comprehensive SW development environment for deploying AI on DEEPX NPUs. It integrates tools for compiling, optimizing, simulating, and inferring the latest AI models, such as YOLO, ViT, and VLMs. And it provides an optimized, ready-to-use environment as the DX-All Suite package to support fast and efficient AI development.

## Target Applications

- Edge Cameras Systems
- Smart Mobility
- Smart Factory
- Smart Cities
- Robotics
- Drones
- Edge Computing
- Smart Homes
- Smart Retail

**DEEPX HQ**
5F, 20 Pangyoyeok-ro 241beon-gil, Seongnam-si, Gyeonggi-do, South Korea

**USA**
1735 Technology Drive Suite 740. San Jose, CA U.S.A

**Taiwan**
Nanjing E. Rd., Zhongshan Dist., Taipei City 104, Taiwan (R.O.C.)

**Europe**
Coming Soon

Buy Now! - DX TechBridge Program
Contact Sales - sales@deepx.ai

# DXNN® SDK

**DXNN® (DEEPX Neural Network) SDK streamlines AI deployment on DEEPX NPUs** by integrating version-aligned tools for compilation, optimization, simulation, and inference. For **efficient development**, it's offered as the **DX-AS (All Suite), a fully integrated and optimized package.**


## How It Works: 4-Step AI Deployment with DXNN® SDK

**Step 1**

### Prepare Your ONNX Model

Convert a pre-trained AI model from frameworks such as TensorFlow, PyTorch, or scikit-learn into the ONNX format, which enables model interoperability.

**AI Model Traning**

TensorFlow | TensorFlow Lite | Keras | XGBoost | PyTorch

↓

User Must Convert to ONNX Before Input

**Step 2**

### Convert Model for DX-NPU

Use the DX-COM compiler to convert the ONNX model into a format optimized for DEEPX NPU hardware, ensuring efficient execution on the target NPU.

User Must Convert to ONNX Before Input

↓

DX-COM™

↓

DEEPX AI Model

**Step 3**

### Real-time Operating DX-RT

Deploy the optimized model using the DX-RT runtime API. Input data is fed into the model, and inference results are produced in real-time on-device.

DEEPX AI Model | Input Tensor | Output Tensor

↓ ↓ ↑

DX-RT™ API

↕

DEEPX AI Products

**Step 4**

### Run Your Application

Apply NPU-generated AI inference results to applications like Image & Video Analytics, Object Detection, Robotics and Automation, and Smart Homes and Factories.

**DEEPX AI Products Applications**

↓

Image & Video Analytics | Object Detection

Robotics and Automation | Smart Homes and Factories

## DXNN® Full Stack Architecture

DXNN® Full Stack Architecture streamlines AI model deployment onto DEEPX products using its two-stage AI Model Compile and Runtime Environments.

### 1) AI Model Compile Environment

**AI Model Input Sources**

TensorFlow | TensorFlow Lite | PyTorch | Keras | XGBoost

↓

**ONNX User Model**
User Must Convert to ONNX Before Input

↓

**AI Model Compiler**

- **DX-COM®** — NPU Model Compiler
- **DX-TRON** — Graphical Model Viewer

↓

- **DX-Model Zoo** — DEEPX Pre-compiled Models
- or
- **Compiled User Model** — Optimized Binary for DEEPX NPU

### 2) AI Model Runtime Environment

**AI Model Input Sources**

- **DX-APP** — SDK Usage Examples
- **User App** — Your Custom Application

**AI App Dev Tool**

- DX-STREAM™
- gstreamer

**Ecosystem**

aws AWS IoT Greengrass | Baidu | NetworkOptix | CVEDIA | VCA | WNDRVR

**DX-RT™**

- C++-based DX-RT™ API
- Python-based DX-RT™ API
- Core Runtime Library
- Device Drivers (Windows or Linux)

↕ PCIe

**DEEPX AI Products**

| DX-M1™ | DX-M1M | DX-H1 | DX-V3 | DX-M2™ |
|---|---|---|---|---|
| AI Accelerator | AI Accelerator | AI Accelerator | AI Vision SoC | GenAI Accelerator |

**DEEPX HQ**
5F, 20 Pangyoyeok-ro 241beon-gil, Seongnam-si, Gyeonggi-do, South Korea

**USA**
1735 Technology Drive Suite 740. San Jose, CA U.S.A

**Taiwan**
Nanjing E. Rd., Zhongshan Dist., Taipei City 104, Taiwan (R.O.C.)

**Europe**
Coming Soon

Buy Now! - DX TechBridge Program

Contact Sales - sales@deepx.ai