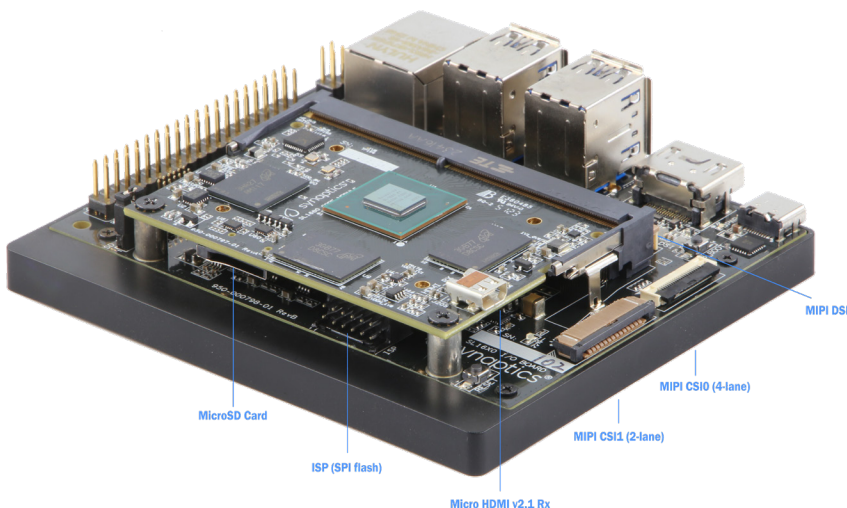




The Synaptics® Astra™ Machina Foundation Series evaluation kit enables easy and rapid prototyping for the Synaptics SL-Series of multimodal AI-native embedded IoT processors. A modular design supports swappable compute modules on a common I/O board, with daughter cards for integrated Wi-Fi® and Bluetooth® connectivity, debug, and flexible I/O. The evaluation kit supports the full range of the Synaptics SL1600 series of SoCs including the SL1680, SL1640, and SL1620. This flexible compute platform, combined with a unified software stack, enables fast evaluation of AI-enabled edge solutions for consumer, enterprise, and industrial IoT system designs.

The Astra Machina evaluation kits are supported by an open, Yocto Linux® distribution delivered as part of the Synaptics ESSDK, available on Synaptics Astra GitHub. With the Synaptics AI toolkit, users benefit from a feature-rich, robust and open edge AI platform designed for all stages of the AI journey from beginner to advanced.

Utilize industry-standard open-source libraries and frameworks such as GStreamer and V4L2 to create video and display pipelines. Leverage multi-TOPS neural processing units (NPUs) to securely run inferencing for a range of functions including object detection, classification, and segmentation. Work with AI-enabled audio algorithms for far-field voice, wake words, echo cancellation, noise reduction, and voice biometrics.



EASY + FAST PROTOTYPING



UNIFIED SOFTWARE EXPERIENCE



COMPREHENSIVE AI TOOLKIT



PRE-PAIRED WIRELESS OPTIONS



MODULAR DESIGN

Features

Core modules*:

- Synaptics SL1680, SL1640, SL1620 SoCs
- Storage (eMMC 5.1), memory (DRAM), PMIC, SD card slot
- HDMI Micro Rx interface
- Audio Input/Output

Daughter card interface options:

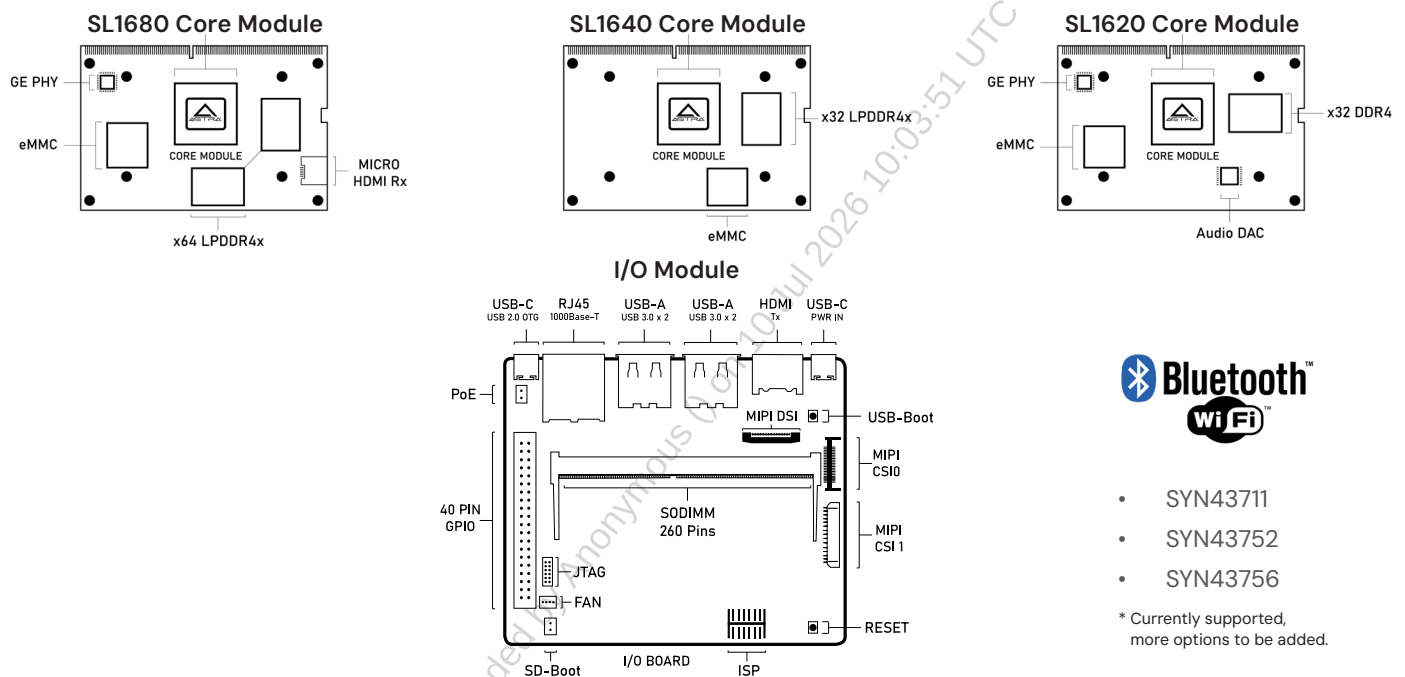
- MIPI® DSI, MIPI CSI-2®
- JTAG, 40-pin header
- 4-pin PoE+
- 4-pin connector

I/O board:

- HDMI Type-A Tx
- M.2 E-key 2230 slot for SDIO, PCIe®, UART
- USB 3.0 Type-A: 4 ports, host mode
- USB 2.0 Type-C: OTG host or peripheral mode
- Push buttons: USB-BOOT selection and system RESET
- 2pin Header: SD-BOOT selection
- Type-C power supply with 15V @ 1.8A

* Not all features available on all core modules, please refer to the respective Core Module User Guide.

System Diagrams



- SYN43711
- SYN43752
- SYN43756

* Currently supported, more options to be added.

Resources

- Synaptics Astra GitHub: <https://github.com/synaptics-astra>
- Synaptics AI Toolkit: <https://synaptics-synap.github.io/doc/v/latest/>
- SL1680 Developer Kit User Guide: <https://github.com/synaptics-astra/doc/blob/main/hw/sl1680.rst>
- SL1640 Developer Kit User Guide: <https://github.com/synaptics-astra/doc/blob/main/hw/sl1640.rst>
- SL1620 Developer Kit User Guide: <https://github.com/synaptics-astra/doc/blob/main/hw/sl1620.rst>



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PN: 190-000428-01 REV B

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