Application Note

Astra™ Machina Foundation Series - PoE Hardware Connection

Abstract: This document provides guidance on establishing Power over Ethernet (PoE) connections for the Astra™ Machina Foundation Series, including required hardware, connection diagrams, and setup instructions to ensure seamless power delivery for SL-Series core modules.

  | PN: 506-001501-01 Rev A

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1. Overview

The Astra™ Machina Foundation Series offers evaluation-ready kits that facilitate quick and straightforward prototyping with the Synaptics SL-Series of embedded Linux® and Android™ processors. Featuring a modular design, these kits include interchangeable core compute modules, a standard I/O board and daughter cards for connectivity, debugging, and various I/O configurations. Furthermore, the Astra Machina Foundation Series is equipped with Power over Ethernet (PoE) support.

1.1. Scope

This document provides a clear PoE connection diagram that is suitable for all SL-Series core modules: SL1680, SL1640, and SL1620. This ensures that the Astra Machina Foundation Series can receive power via PoE.

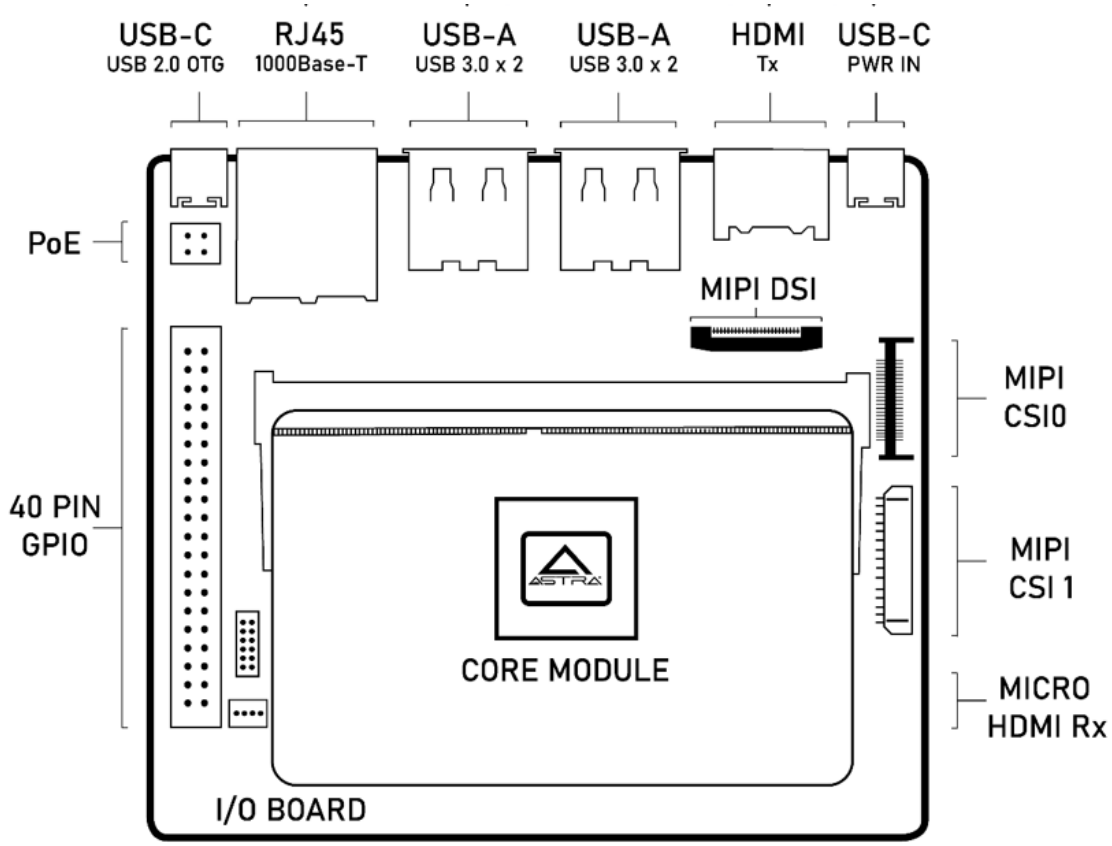

Figure 1. Overview of Astra Machina Foundation Series

1.2. Accessories Hardware Items Needed

[a] Astra Machina Foundation Series

[b] Power Sourcing Equipment (PSE) switch distributes power

[c] PoE HAT, 802.3af/at PoE/+

[d] Ethernet cables and jumper wires

[e] Laptop or desktop computer with terminal emulator software

1.3. Connection Block Diagram

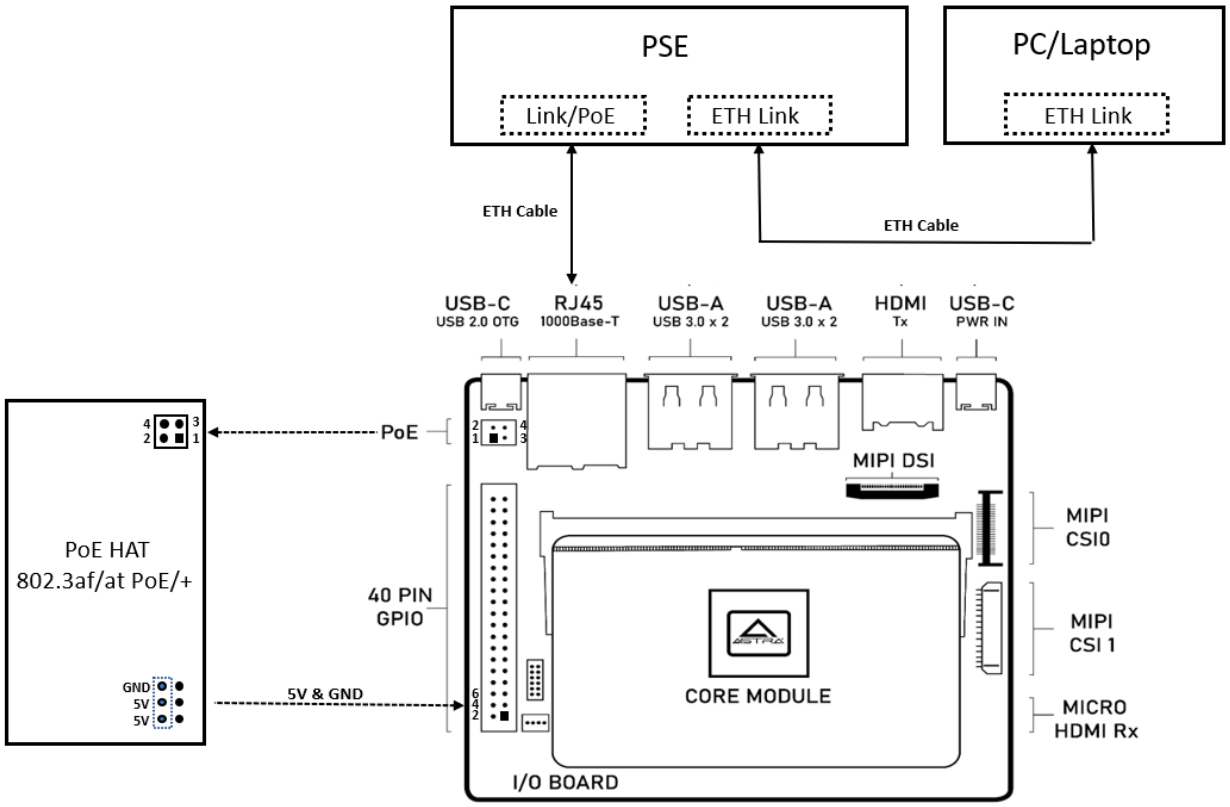

Figure 2. PoE connection block diagram

1.4. Making the Connections

[a] Connect an Ethernet cable from a laptop or desktop computer equipped with terminal emulator software to the Ethernet uplink port of the PSE.

[b] Connect an Ethernet cable from any of the PoE & Switch ports on the PSE to an RJ45 port on the Astra Machina Foundation Series.

[c] Connect four jumper wires with 1-pin to 1-pin, featuring 100-mil spacing headers on both ends, from the PoE port of the Astra Machina Foundation Series to the PoE HAT.

[d] Connect three jumper wires, each with 1-pin to 1-pin, featuring 100-mil spacing headers on both ends, from J32-2,4,6 (corresponding to 5V, 5V, and GND respectively) on the 40-pin header of the Astra Machina Foundation Series to the specified location on the PoE HAT, as shown in Figure 2.

1.5. Basic PoE Accessories

- BV-Tech 6 Port PoE+ Switch (4 PoE+ Ports with 2 Ethernet Uplink and Extend Function) – 60W
- UCTRONICS PoE HAT module: UCTRONICS PoE HAT for Raspberry Pi 4B/3B+, PoE Support 802.3af PoE Network Standard, Compatible with Pi 4B / 3B+

2. References

- *Astra Machina Foundation Series Quick Start Guide* (PN: 511-001404-01)
- *Astra Machina SL1620 Developer Kit User Guide* (PN: 511-001407-01)
- *Astra Machina SL1640 Developer Kit User Guide* (PN: 511-001405-01)
- *Astra Machina SL1680 Developer Kit User Guide* (PN: 511-001403-01)

3. Revision History

Revision	Description
1	Initial release
A	Minor update to latest template and release as production.

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