Application Note

Astra™ Machina Foundation Series SL1620, RGB LCM Hardware Connection

Abstract: This application note outlines the connection process for integrating an RGB LCD module with the Astra™ Machina Foundation Series using the Synaptics 4-in-1 LCM adapter board. It provides basic guidance on required components and setup for seamless integration.

  | PN: 506-001525-01 Rev B

Contents

List of Figures

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 variety of daughter cards for connectivity, debugging, and various I/O configurations.

1.1. Scope

This document contains a clear connection diagram for an RGB LCD module, designed specifically for the core module that includes an SL1620 SoC. It supports MIPI DPI (RGB) for connecting specific LCD modules to a Synaptics-designed 4-in-1 LCM adapter board.

This document primarily focuses on the DT050ATFT and DT050ATFT-PTS.

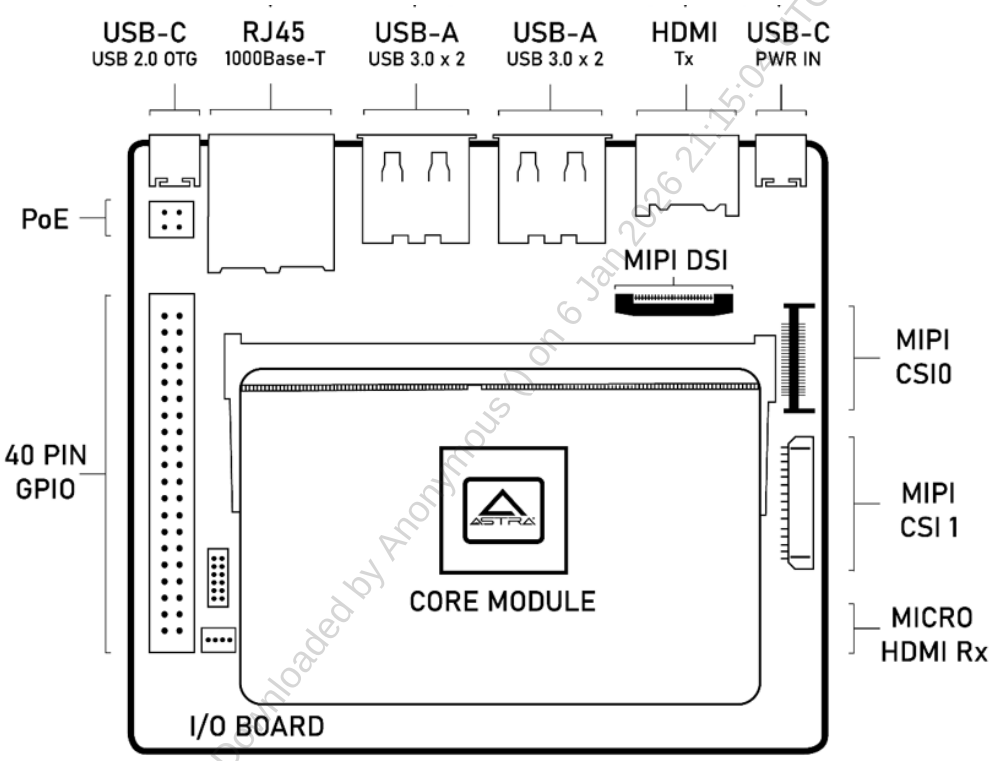

Figure 1. Overview of Astra Machina Foundation Series

1.2. Accessories hardware items needed

[a] Synaptics Astra Machina Foundation Series with SL1620 Core Module ONLY.

[b] Synaptics MIPI-DPI & DBI_LCDM_Adapter to fit any of 4-in-1 LCD modules. (PN: 730-C01087-01)

[c] This document specifically focuses on the DT050ATFT and DT050ATFT-PTS. (PN: 730-001836-01)

LCD module by DisplayTech DT050ATFT without CTP or DT050ATFT-PTS with CTP feature.

[d] 50mm length of 54pin/0.5mm pitch FFC cable.

1.3. Connection block diagram

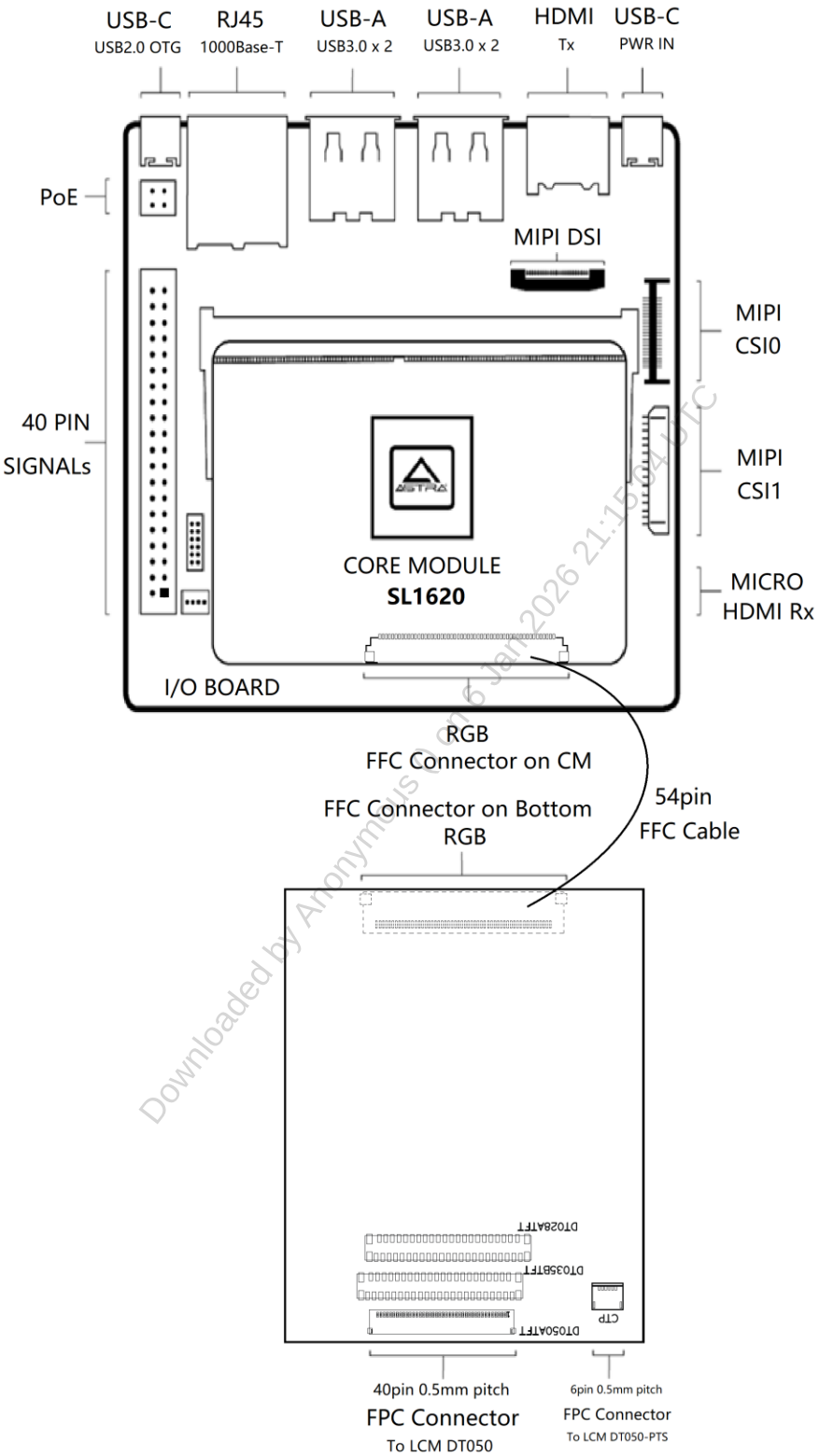

Figure 2. Connection block diagram for RGB LCD Module

1.4. Making the connections

[a] Get the SL1620 core module that is equipped with the Astra I/O board.

[b] Connect LCM's integrated FPC cable to the 40-pin/0.5mm pitch connector of 4-in-1 LCM adapter board, as shown in Figure 2. Ensure that the actuator of the FFC connector on the 4-in-1 LCM adapter board is open before inserting the FFC cable , as well as FFC contact side for orientation, as shown in Figure 3 and Figure 4.

[c] Connect a cable in the length of 51mm between the RGB connector of SL1620 core module and the FFC connector of the 4-in-1 LCM adapter board, as shown in Figure 2. Ensure that the actuator of the FFC connector on either the core module or the 4-in-1 LCM adapter board is open before inserting the FFC cable, as well as the FFC Stiffener Film side being upper for orientation, as shown in Figure 3, Figure 4 and Figure 5.

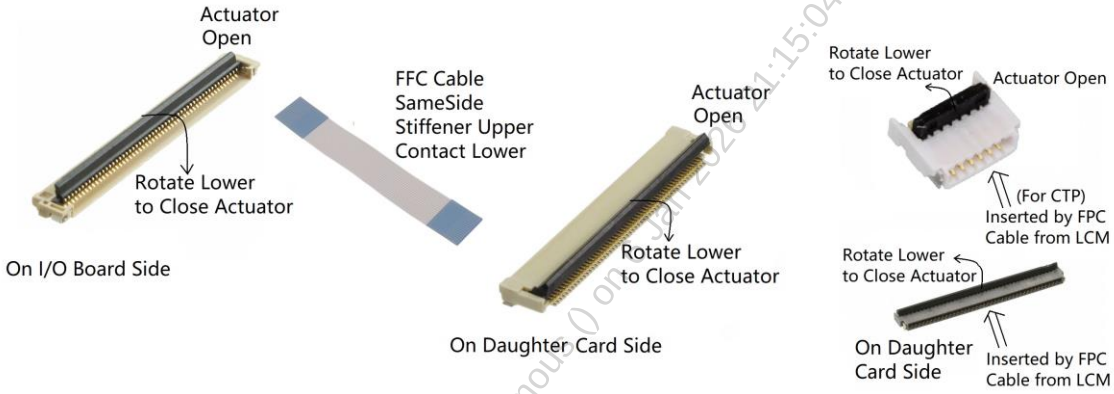

Figure 3. Connector Actuator Status & FFC cable side

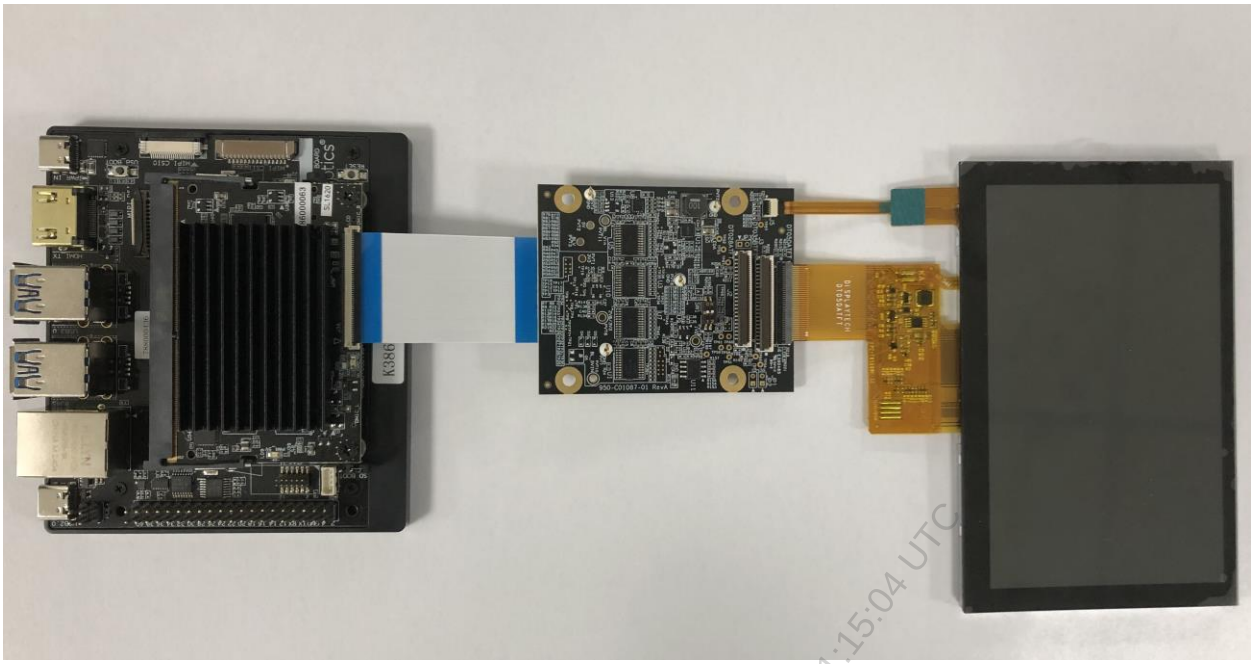

Figure 4. Complete connection to the 4-in-1 LCM Adapter Board (top view)

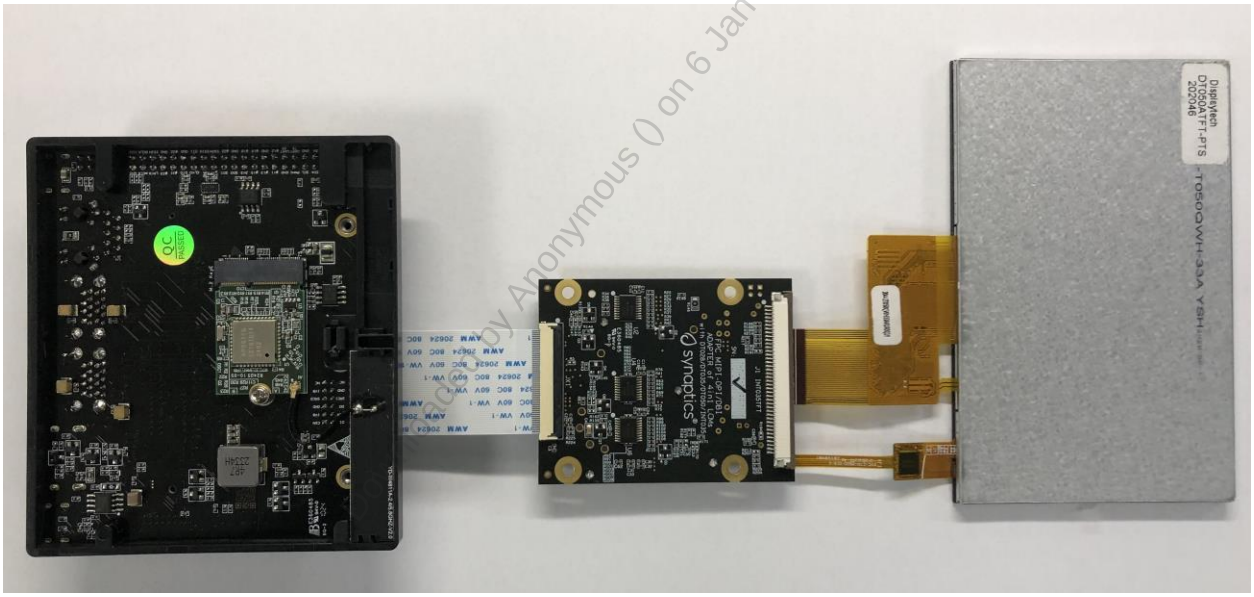

Figure 5. Complete connection to the 4-in-1 LCM Adapter Board (bottom view)

1.5. Basic information of 4-in-1 LCM Adapter

- The Synaptics-designed 4-in-1 LCM adapter board supports up to four different LCD modules which include three RGB and one CPU type of LCD module. Note that only one LCD module is tied each time and multiple LCDs are not allowed to be tied simultaneously.
- Supported adapters include: DT028ATFT, DT035BTFT & DT050ATFT/DT050ATFT-PTS, and INT035TFT by DisplayTech.

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)
- *MIPI-DPI & DBI_LCDM_Adapter board* (PN: 730-C01087-01)
- *DisplayTech 5" 800x480 LCD module DT050ATFT-PTS* (PN: 730-001836-01)

3. Revision History

Revision	Description
A	Initial release.
B	Minor update to latest template, fixed trademark typo, and changed title as this application note only applies to SL1620.

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