

AFE-E350 3.5" SBC, Intel® Atom® x6000E and Celeron® J Series, DDR4, HDMI, DP, 3 x GbE, PoE, HDMI, DP, CAN-FD, M.2 E-Key 2230/80, M.2 B-Key 3042/52, DC-In 12-24V, and EdgeBMC

Startup Manual

Packing List

Please ensure the following items have been shipped before installing your board:

- 1 x SATA Cable 30cm (P/N: 1700006291)
- 1 x SATA Power Cable 35cm (P/N: 1700031583-01)
- 1 x USB 2.0 Cable 20cm (P/N: 1700030406-01)
- 2 x COM RS-232/422/485 Cable 20cm (P/N: 1700030404-01)
- 2 x COM RS-232 4-Wire Cable 20cm (P/N: 1700031582-01)
- 1 x Heatsink 0 ~ 60°C (P/N: 1970005873T001) or 1 x Heatsink -40 ~ 85°C (P/N: 1970005855T001)
- 1 x Screw Kit (2 sets of screws for the M.2 device & 4 sets of screws and stand-off for the heatsink/cooler)

If any of these items are missing or damaged, please contact your distributor or sales representative immediately.

Note1: For detailed content regarding AFE-E350, please refer to information on the support website: <http://support.advantech.com.tw>

Note2: Adobe Reader is required to view any PDF file. Adobe Reader can be downloaded at: <http://get.adobe.com/reader> (Adobe is a trademark of Adobe Systems Incorporated.)

For more information on this and other Advantech products, please visit our website at:

<http://www.advantech.com>

For technical support and service, please visit our support website at:

<http://support.advantech.com>

This manual is for AFE-E350.

Part No. 2046E35002

Printed in China

3rd Edition

June 2024

Specifications

General

- **CPU:**
 - Intel® Atom® x6425E (Quad-Core, 2.00 GHz)
 - Intel® Atom® x6413E (Quad-Core, 1.50 GHz)
 - Intel® Atom® x6211E (Dual-Core, 1.30 GHz)
 - Intel® Celeron® J6412 (Quad-Core, 2.00 GHz)
- **System Memory:** Single-channel, SODIMM DDR4-3200MT/s, up to 32GB
- **BIOS:** AMI EFI 256Mbit
- **Watchdog Timer:** 65536 levels, 0~65535 sec
- **iManager 3.0:** Yes
- **Battery:** Lithium 3V/210mAh
- **Audio:** Supports High Definition Audio (HD), Line-In, Line-Out, and Mic-In.

Expansion Interface

- 1 x M.2 E-Key 2230 module (PCIe x1, USB 2.0 to support the wireless module)
- 1 x M.2 B-Key 3042/3052 module (Default USB 2.0, optional PCIe x2 to support the 5G_GNSS/LTE module)
- 1 x M.2 M-Key 2280 module (Default SATA III, optional PCIe x1)

Display

- **Controller:** Intel® Gen11 Graphics Engines (SoC integrated)
- **Maximum Resolution:**
 - 1 x LVDS Dual Channel 18-/24-/48-bit LVDS
 - 1 x HDMI 2.0 up to 4096x2160x24bpp @60Hz
 - 1 x DP 1.4 up to 4096x2160x36bpp @60Hz

Ethernet Interface

- **Max. Speed:** LAN1:1Gbps, LAN2&3: 2.5Gbe/port
- **Controller:** LAN1: Intel® i210; LAN2&3: Intel® i226
- **EdgeBMC OOB LAN Port:** LAN1
- **PoE (Optional):** LAN2 & LAN3 features PoE support 802.3af 15.4W/port or 802.3at 30W single port by optional MIOe-PSE power module.

I/O

- **Internal I/O:** 1 x SATA, 2 x USB 2.0, 2 x USB 3.2, 2 x RS-232/422/485, 2 x RS-232, 1 x I2C/SMB (optional), 8-bit GPIO, HD Audio, PoE, Front Panel, 2 x CAN bus 2.0 / FD
- **Power Connector Type:** 2-pin Phoenix connector

Specifications (Cont.)

Mechanical and Environmental

- **Dimensions (L x W):** 146 x 102 mm (5.7" x 4")
- **Power Requirement:** Vin: 12V-24V ±10%
- **Operating Temperature:**
Standard: 0 ~ 60°C (32 ~ 140°F)
Extended: -40 ~ 85°C (-40 ~ 185°F)

Jumpers and Connectors

The board has a number of connectors and jumpers to configure the system to suit your application requirements. The tables below list the function of each of the connectors and jumpers.

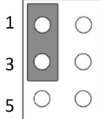
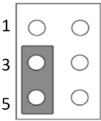
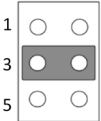
Jumpers	
Label	Function
VDD1	Panel Voltage Selection Jumper
SW1	Miscellaneous Selection Jumper

Connectors		
	Description	Part Reference
1	I2C_1	I2C/ SMBus Internal Connector
2	FAN1	Smart FAN Internal Connector
3	COM3	COM-Port Internal Connector 3
4	COM4	COM-Port Internal Connector 4
5	USB2	USB 3.2 Dual-Port Connector
6	CANBUS2	CAN Bus Internal Connector
7	DIMMA1	DDR4 SODIMM Connector
8	HDMI1	HDMI Connector
9	DP1	Display Connector
10	LAN3	RJ-45 LAN Port Connector 3 (Alt POE)
11	LAN2	RJ-45 LAN Port Connector 2 (Alt POE)
12	POE_PWR1	POE Power Internal Connector
13	LAN1	RJ-45 LAN Port Connector 1
14	DCIN1 DCIN2	DC Power Input Connector
15	COM2	COM-Port Internal Connector 2
16	COM1	COM-Port Internal Connector 1
17	CN1	Front Panel Internal Connector
18	GPIO1	GPIO Internal Connector
19	USB3	USB 2.0 Dual-Port Internal Connector
20	AUDIO1	Audio Internal Connector
21	CANBUS1	CAN Bus Internal Connector

Jumpers and Connectors (Cont.)

22	SATAP1	SATA Power Connector
23	BL1	Panel Inverter Connector
24	USB1	USB 3.2 Dual-Port Internal Connector
25	SATA1	SATA Connector
26	LVDS1	LVDS Connector
27	VDD1	Panel Voltage Selection Jumper
28	SW1	Miscellaneous Selection Jumper
29	BAT1	RTC battery Connector
30	M2_E1	M.2 E-Key Connector
31	M2_M1	M.2 M-Key Connector
32	M2_B1	M.2 B-Key Connector [3042/ 3052 Co-Lay]
33	SIM1	SIM (Subscriber Identity Module) Card

VDD1: Panel Voltage Selection

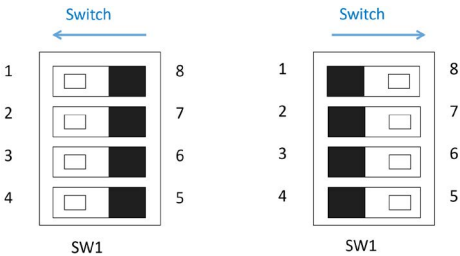
Function	Setting
Jumper position for +3.3V (Default)	
Jumper position for +5V	
Jumper position for +12V	

VDD1: LCD Power Settings

Setting	Function
1-3	+3.3V (*Default)
3-5	+5V
3-4	+12V

Jumpers and Connectors (Cont.)

SW1: Miscellaneous Selection



Jumpers and Connectors (Cont.)

Jumper Short	Panel Function
1	ATX_DET
2	LOAD_BIOS_DEFAULT (Default_off)
3	GPI (no function)
4	Topswap (Default_off)
5	Topswap (On)
6	GPI (no function)
7	LOAD_BIOS_DEFAULT (On)
8	AT_DET# (Default)

Connector Locations

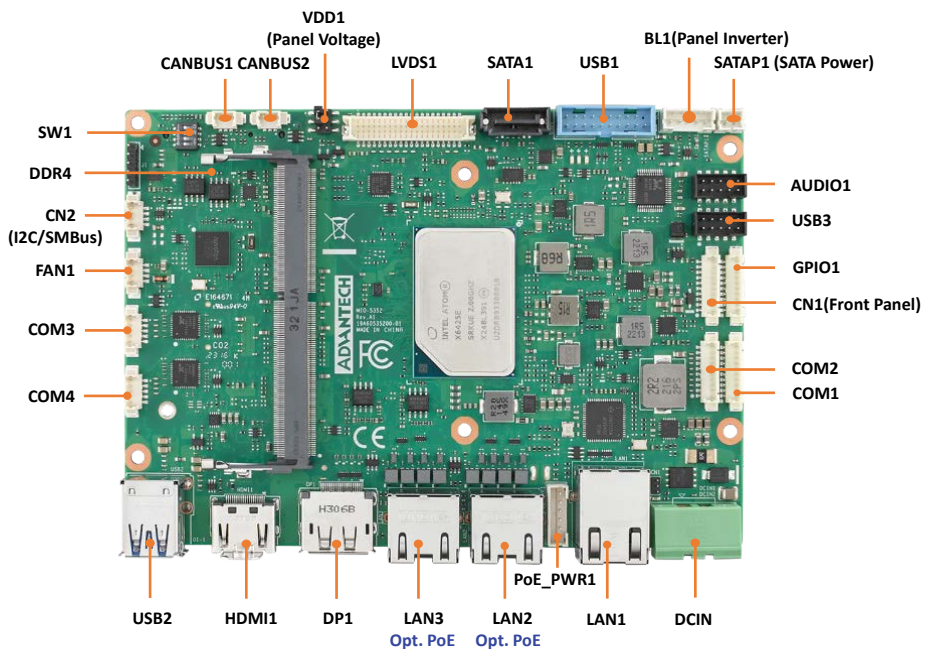


Figure 1: AFE-E350 Connector Locations (Top Side)

Connector Locations (Cont.)

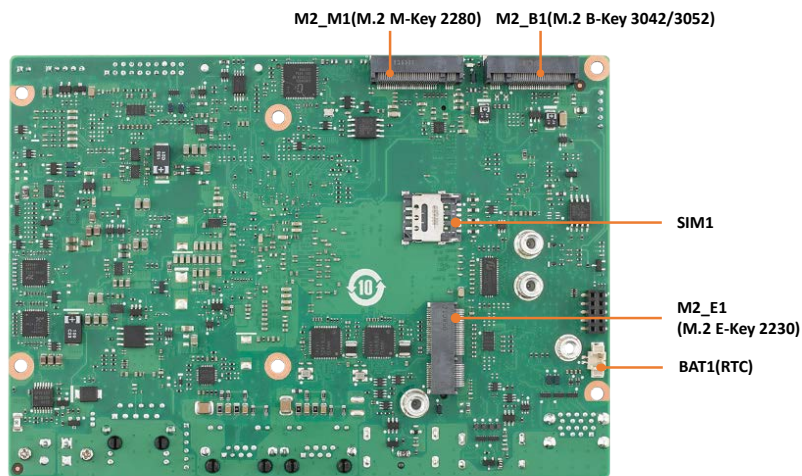


Figure 2: AFE-E350 Connector Locations (Bottom Side)



Figure 3: AFE-E350 Connector Locations (Coastline)

Mechanical Diagram

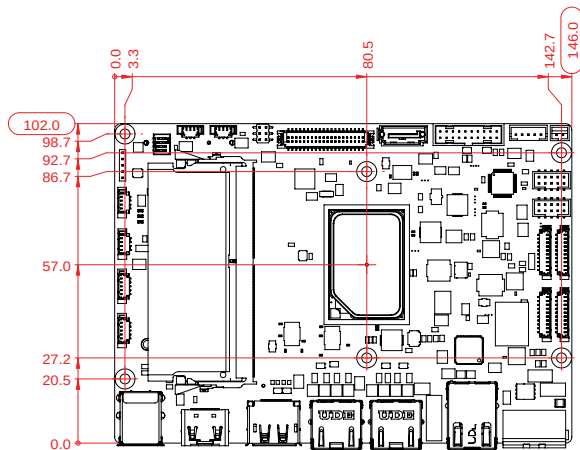


Figure 4: AFE-E350 Mechanical Diagram (Top Side)

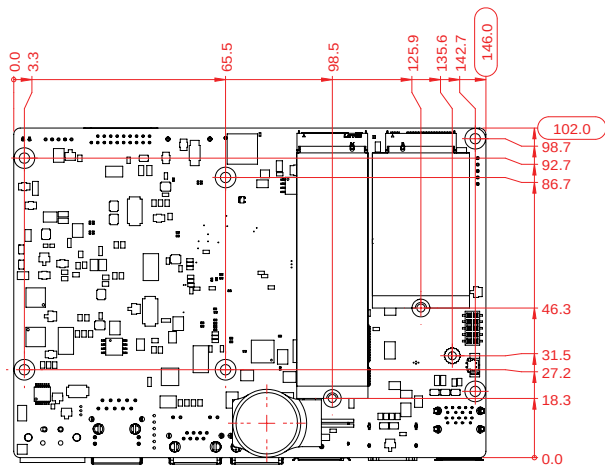


Figure 5: AFE-E350 Mechanical Diagram (Bottom Side)

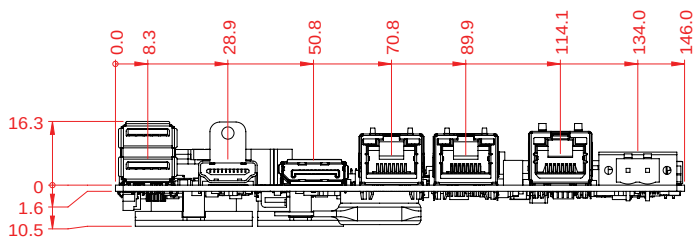


Figure 6: AFE-E350 Mechanical Diagram (Coastline)

Mechanical Diagram (Cont.)

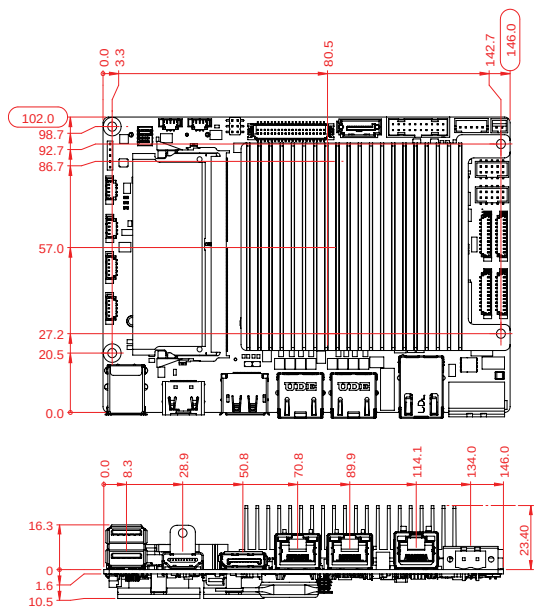


Figure 7: AFE-E350 Mechanical Diagram (with 0 ~ 60°C Heatsink)

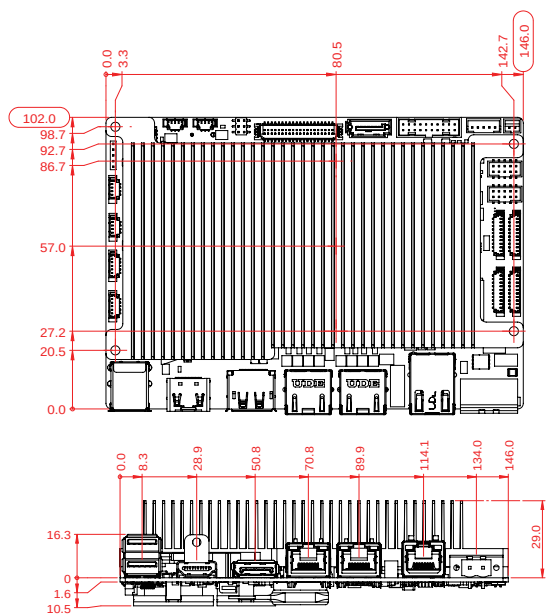


Figure 8: AFE-E350 Mechanical Diagram (with -40 ~ 85°C Heatsink)

Quick Installation Guide

1. Retrieve the heatsink from the accessory box. Remove the release paper from the thermal pads.

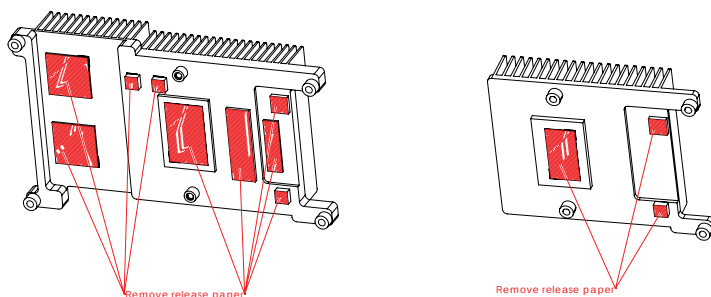


Figure 9: AFE-E350 Heatsink Thermal Pad Indication

2. There are four screws on the heatsink / cooler / heat spreader. Follow the installation sequence demonstrated below to secure the heatsink.

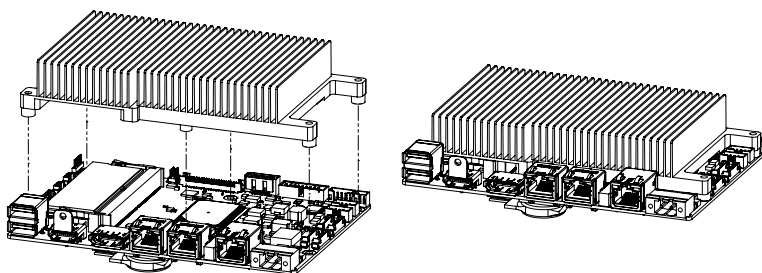


Figure 10: AFE-E350 Heatsink Assembly Guide (-40 ~ 85°C)

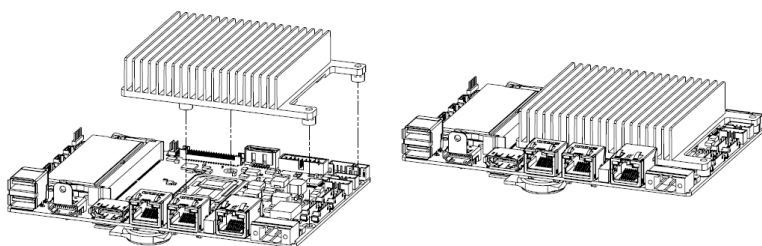


Figure 11: AFE-E350 Heatsink Assembly Guide (0 ~ 60°C)

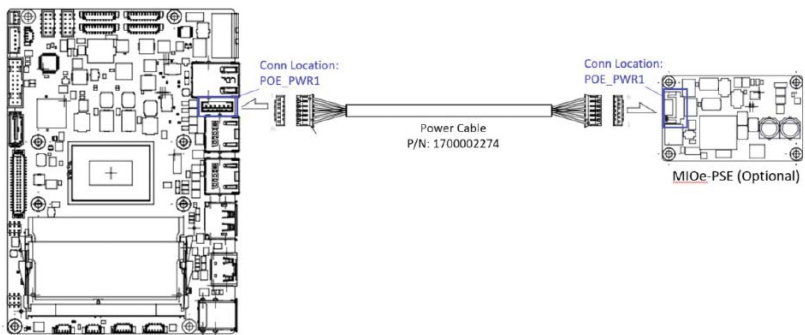


Figure 12: AFE-E350 PoE Module Assembly Guide (Optional MIOe-PSE Module)