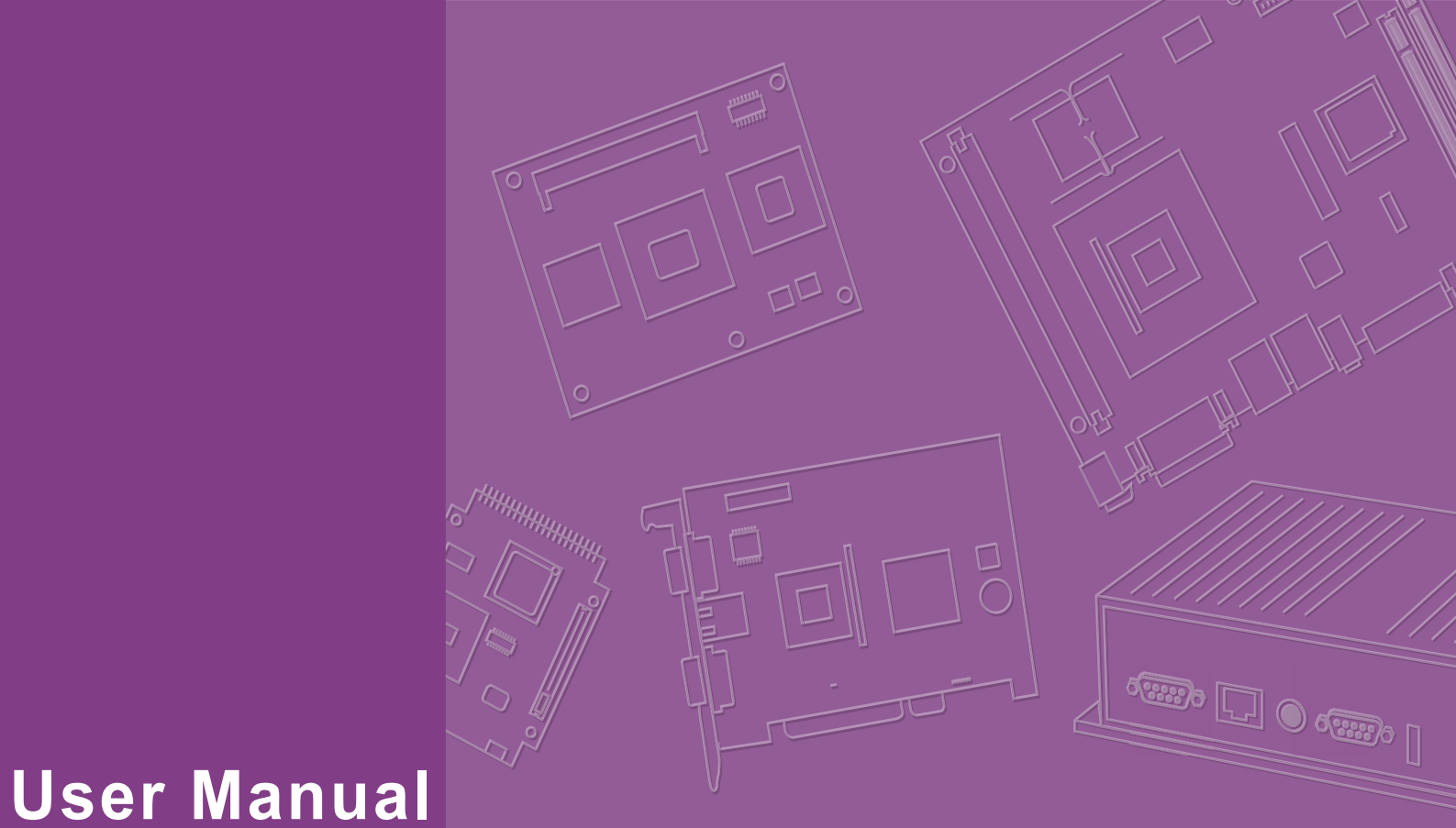




User Manual

EPD Control Board EPD-130

ePaper Display Solution

ADVANTECH

Enabling an Intelligent Planet

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Product Warranty (2 years)

Advantech warrants to you, the original purchaser, that each of its products will be free from defects in materials and workmanship for two years from the date of purchase.

This warranty does not apply to any products which have been repaired or altered by persons other than repair personnel authorized by Advantech, or which have been subject to misuse, abuse, accident or improper installation. Advantech assumes no liability under the terms of this warranty as a consequence of such events.

Because of Advantech's high quality-control standards and rigorous testing, most of our customers never need to use our repair service. If an Advantech product is defective, it will be repaired or replaced at no charge during the warranty period. For out-of-warranty repairs, you will be billed according to the cost of replacement materials, service time and freight. Please consult your dealer for more details.

If you think you have a defective product, follow these steps:

1. Collect all the information about the problem encountered. (For example, CPU speed, Advantech products used, other hardware and software used, etc.) Note anything abnormal and list any onscreen messages you get when the problem occurs.
2. Call your dealer and describe the problem. Please have your manual, product, and any helpful information readily available.
3. If your product is diagnosed as defective, obtain an RMA (return merchandise authorization) number from your dealer. This allows us to process your return more quickly.
4. Carefully pack the defective product, a fully-completed Repair and Replacement Order Card and a photocopy proof of purchase date (such as your sales receipt) in a shippable container. A product returned without proof of the purchase date is not eligible for warranty service.
5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

Declaration of Conformity

FCC Class B

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation.

IMPORTANT NOTE:

FOR MOBILE DEVICE USAGE (>20cm/low power)

Radiation Exposure Statement:

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

FOR COUNTRY CODE SELECTION USAGE (WLAN DEVICES)

Note: The country code selection is for non-US model only and is not available to all US model. Per FCC regulation, all Wi-Fi product marketed in US must fixed to US operation channels only.

USER MANUAL OF THE END PRODUCT:

In the user manual of the end product, the end user has to be informed to keep at least 20cm separation with the antenna while this end product is installed and operated. The end user has to be informed that the FCC radio-frequency exposure guidelines for an uncontrolled environment can be satisfied.

The end user has to also be informed that any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

If the labelling area is small than the palm of the hand, then additional FCC part 15.19 statement is required to be available in the user manual: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

LABEL OF THE END PRODUCT:

The final end product must be labeled in a visible area with the following "Contains TX FCC ID: M82-EPD-132-092".

If the labelling area is larger than the palm of the hand, then the following FCC part 15.19 statement has to also be available on the label: This device complies with Part 15 of FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

NCC

低功率電波輻射性電機管理辦法

- 第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
- 第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。前項合法通信，指依電信法規定作業之無線電通信。低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

模組認證：

1. 本模組於取得認證後將依規定於模組本體標示審驗合格標籤。
2. 系統廠商應於平台上標示「本產品內含射頻模組： XXXyyyLPDzzzz-x」字樣。

Technical Support and Assistance

1. Visit the Advantech website at <http://support.advantech.com> where you can find the latest information about the product.
2. Contact your distributor, sales representative, or Advantech's customer service center for technical support if you need additional assistance. Please have the following information ready before you call:
 - Product name and serial number
 - Description of your peripheral attachments
 - Description of your software (operating system, version, application software, etc.)
 - A complete description of the problem
 - The exact wording of any error messages

Packing List

Before setting up the system, check that the items listed below are included and in good condition. If any item does not accord with the table, please contact your dealer immediately.

- 1 pcs EPD-130 EPD control board & 1 pcs 13.3" EPD

Ordering Information

Part No.	Description
EPD-130B1AG-NSD01	13.3 " Black/White EPD solution
EPD-130R1AG-NSD01	13.3 " Red/Black/White EPD solution

Optional Accessories

Part No.	Description
1700029192-01	60cm Micro USB with 5P(M) for power report

Safety Instructions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.
5. Keep this equipment away from humidity.
6. Put this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.
7. The openings on the enclosure are for air convection. Protect the equipment from overheating. **DO NOT COVER THE OPENINGS.**
8. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
9. Position the power cord so that people cannot step on it. Do not place anything over the power cord.
10. All cautions and warnings on the equipment should be noted.
11. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
12. Never pour any liquid into an opening. This may cause fire or electrical shock.
13. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
14. If one of the following situations arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well, or you cannot get it to work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.

DISCLAIMER: This set of instructions is given according to IEC 704-1. Advantech disclaims all responsibility for the accuracy of any statements contained herein.

Consignes de Sécurité

1. Lisez attentivement ces instructions de sécurité.
2. Conservez ce manuel de l'utilisateur pour référence ultérieure.
3. Débranchez cet appareil de toute prise secteur avant le nettoyage Utilisez un chiffon humide. N'utilisez pas de détergents liquides ni en spray pour le nettoyage
4. Pour les équipements enfichables, la prise de courant doit être située à proximité de l'équipement et doit être facilement accessible.
5. Gardez cet équipement à l'abri de l'humidité.
6. Placez cet équipement sur une surface fiable lors de son installation
7. Les ouvertures de l'enceinte sont destinées à la convection de l'air. Protégez le matériel contre la surchauffe. **NE COUVREZ PAS LES OUVERTURES.**
8. Assurez-vous que la tension de la source d'alimentation est correcte avant de connecter l'équipement à la prise de courant.
9. Placez le cordon d'alimentation de sorte que personne ne puisse marcher dessus. Ne placez aucun objet sur le cordon
10. Toutes les mises en garde et avertissements sur l'équipement doivent être notés
11. Si l'équipement n'est pas utilisé pendant une longue période, débranchez-le de la source d'alimentation pour éviter tout dommage dû à une surtension transitoire
12. Ne jamais verser de liquide dans une ouverture sous peine de provoquer un incendie ou un choc électrique
13. Ne jamais ouvrir l'appareil. Pour des raisons de sécurité, cet équipement ne doit être ouvert que par du personnel qualifié
14. Si l'une des situations suivantes se produit, faites vérifier l'équipement par le personnel de service:
 - Le cordon d'alimentation ou la fiche est endommagé.
 - Un liquide a pénétré dans l'appareil.
 - L'équipement a été exposé à l'humidité.
 - L'équipement ne fonctionne pas bien ou vous ne pouvez pas le faire fonctionner conformément au manuel d'utilisation.
 - Equipment L'équipement est tombé et a été endommagé.
 - Equipment L'équipement présente des signes évidents de rupture.

AVERTISSEMENT: Cet ensemble d'instructions est donné conformément à la norme CEI 704-1. Advantech décline toute responsabilité quant à l'exactitude des déclarations contenues dans le

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Chapter 1

Introduction

1.1 Introduction

Advantech EPD-130 provides Micro USB & SPI pin headers to connect to the host computer. The user's host computer can control the ePaper display through the EPD-130. The module can support hospital, factory, warehouse and retail applications with optimization for power consumption. Indeed, system integrators and end users can focus on application development and system management.

The main features of EPD-130 are:

- 13.3" e-Paper panel display
- Support temperature 0 ~ 40 °C in R/B/W, 0 ~ 50 °C in B/W

1.2 Specifications

Display	Screen Size	285.8 x 213.65 mm	
	Resolution	1600 x 1200 pixels	
Storage	Internal	ITE SPI Flash: 32Mb	
	External	-	
I/O (on-board)	SPI	8pin Pin Header	
	Micro USB (CN2)	USB to TCON (Timing Controller)	Interface for data to EPD
	EPD connector	39P for 13.3" (R/B/W or B/W) & 9.7" EPD (R/B/W)	
Power	DC 5V	Micro USB (CN2) up to 0.9A/ 4.5 W in USB3.0 host Micro USB (CN3) up to 2A/10 W	In Data transmission mode With Power supply
Environment	Operational Temperature	0 ~ 40 °C (R/B/W), 0 ~ 50 °C (B/W)	
	Non-Operational Temp.	-25 ~ 60 °C (R/B/W), -25 ~ 70 °C (B/W)	
	Assembly Temperature	10 ~ 40 °C	
	Operating Humidity	5 ~ 85% Relative Humidity, non-condensing	
Physical Characteristics	Dimensions (W x H)	Panel: 285.8 x 213.65 mm PCBA: 100 x 122 x 3 mm	
	Weight	Panel: 0.12g PCBA: 0.17g	

Note! The image for EPD need to follow below instruction.



1. Image need to set as 1600*1200 pixels, do not resize it after complete the image which will cause jaggy edges.
2. 24 bits / BMP format for EPD-132B
3. 24 bits / BMP format for EPD-132R and the color only support below range.
Red: (255,0,0)
Black: (0,0,0)
White (255, 255, 255)

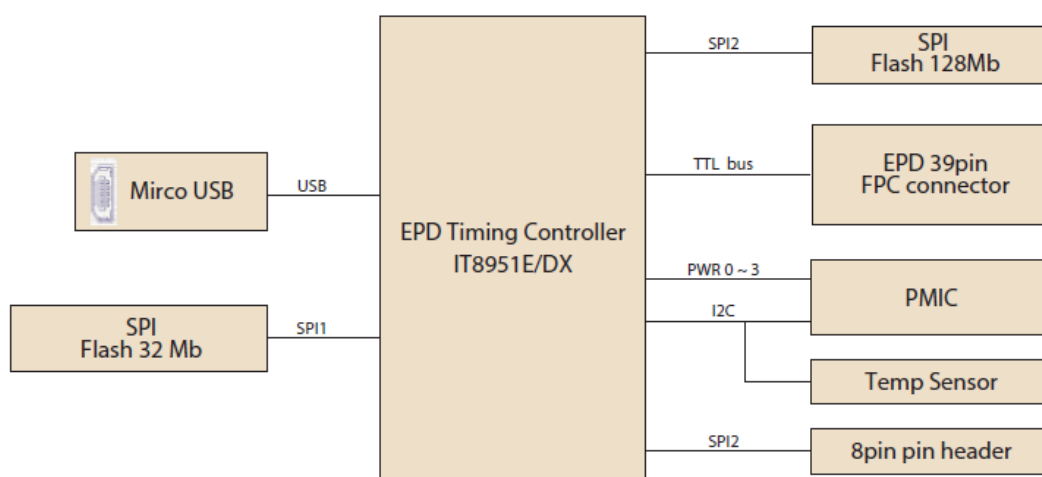


Figure 1.1 Block Diagram

1.3 System Implementation

Advantech provides a total solution for system integrators to select different architecture according to the end customer's system requirements. EPD-130 includes 13.3" ePaper and EPD controller solution.

EPD-130 offers SPI and Micro USB interface for the customer's host computer to control.

1.3.1 Advantech EPD-130 Wired Connection to Customer Host

In some scenarios, customers would like to use their own host computer to control ePaper directly, so they can use EPD-130 which provides Micro USB & SPI pin headers to connect to the host computer. In this user scenario, EPD-130 is in the slave role to be controlled by the developer's host.



Chapter 2

EPD Hardware Specifications

This section provides board level PCBA design in #3.1 and the system level reference design in #3.2.

EPD-132 PCBA with following specs.

- PCBA: 108 x 122 x 3.9 mm
- PCB thickness: 3 mm $\pm$ 10%
- Module input voltage: 5V DC-in
- Connector current rating: 0.5A / Power contact

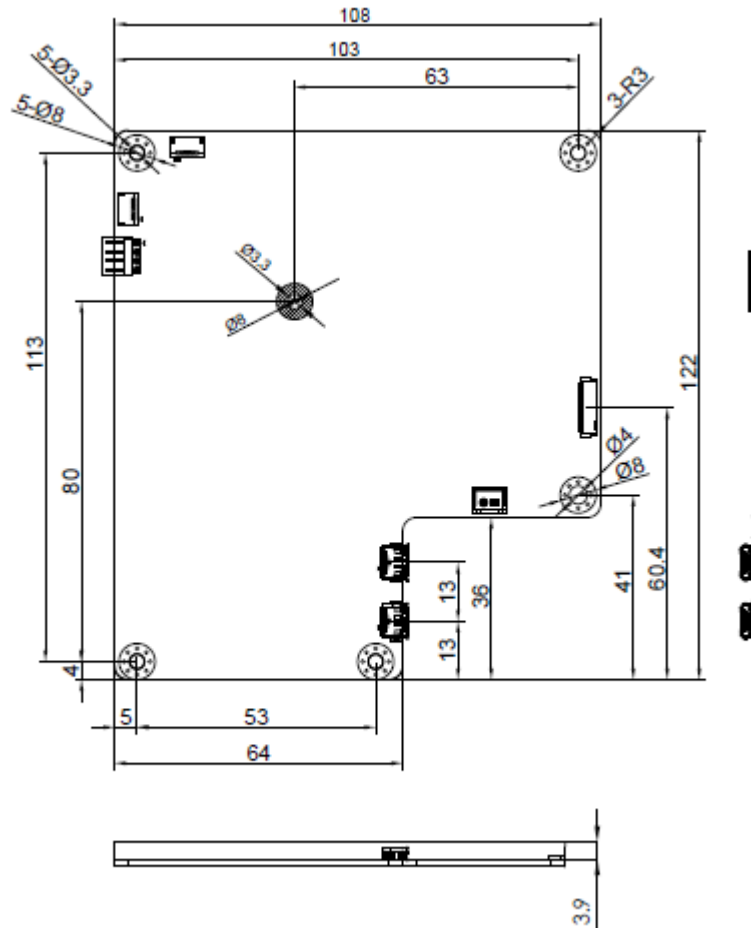


Figure 2.1 MODULE OUTLINE: 108 x 122 x 3.9 mm

13.3" EPD (PN:968AD00147/968AD00388) with following spec.

- Panel Size: 285.8 x 213.65 mm
- PN: 968AD00388 Operation temperature range: 0 °C to +50 °C for Black and White,
- PN:968AD00147 Operation temperature range: 0 °C to +40 °C for Red, Black and White.
- All E Ink Panel inspection criteria refers to E Ink CAS & Inspection standard document.

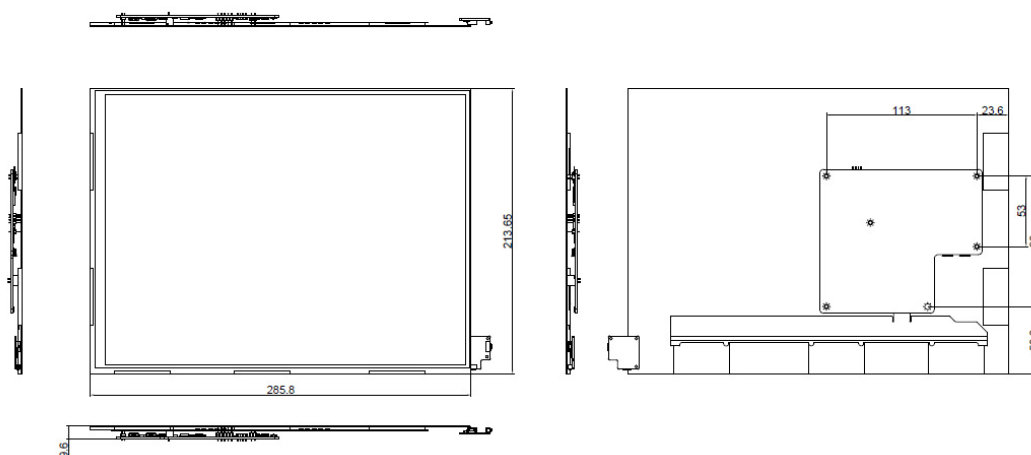


Figure 2.2 Module Connection to Panel Specifications

Note! *E Ink recommended conditions for storage:*
 Temperature: 20 $\pm$ 10 $^{\circ}$ C
 Humidity: 60% RH $\pm$ 10% RH, Non-condensing

Note! *If panel module have been put in low temperature between 0 $\sim$ -25 $^{\circ}$ C for a while, we recommend to leave it between 20 to 30 $^{\circ}$ C for 4 days before assembly.*

2.1 Board Level I/O

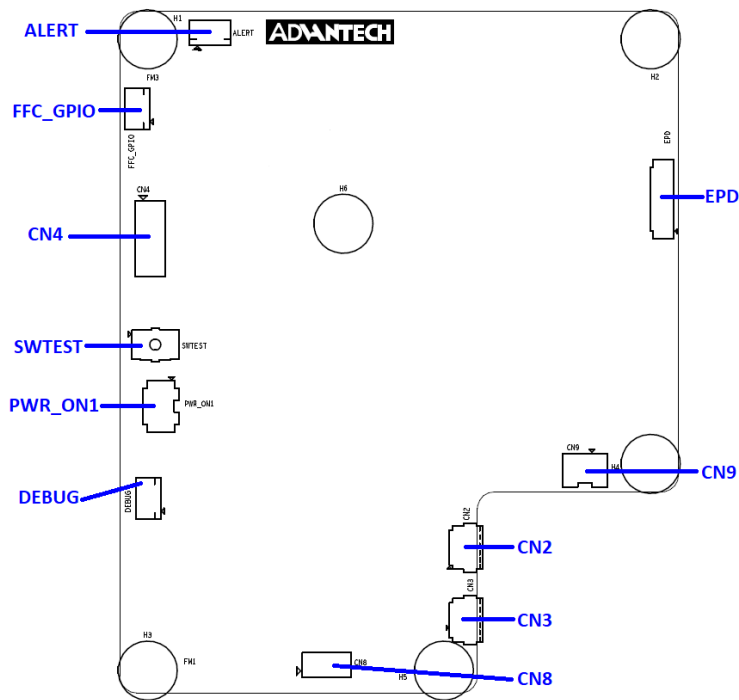


Table 2.1: I/O Connector

NAME	Description	EPD-132	EPD-130
CN2	External Micro USB Port	v	v
CN3	External Micro USB Port	v	v
CN4	10 pins header for ES test		
CN8	8 pins header to connect to host		v
CN9	2 pins connector for DC-IN power		v
EPD	39 pins FPC to connect to e-paper panel	v	v
ALERT	10 pins FFC to connect to daughter board	v	
FFC_GPIO	10 pins FFC connector for external GPIO	v	
DEBUG	10 pins FFC connector	v	
SWTEST	For software test	v	v
PWR_ON1	4 pins DIP Switch	v	

2.1.1 CN2

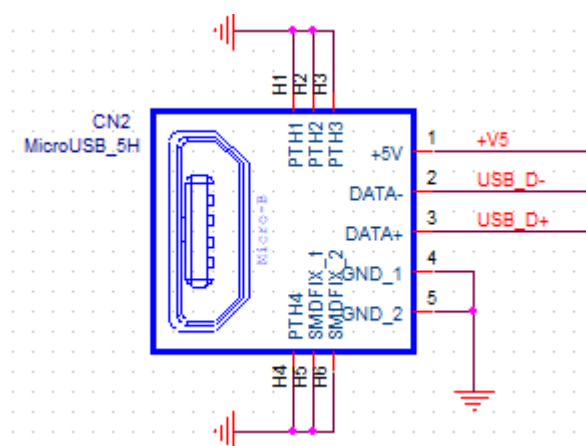
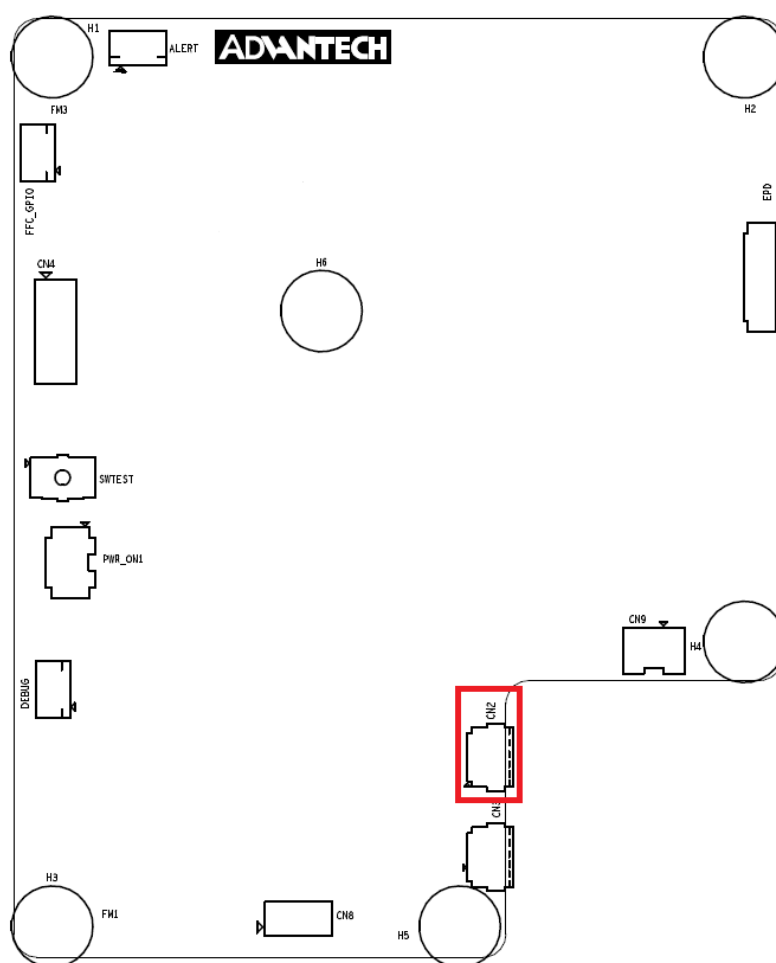


Table 2.2: CN2

PIN	PIN_NAME
1	+V5
2	USB_D-
3	USB_D+
4	GND
5	GND

2.1.2 CN3

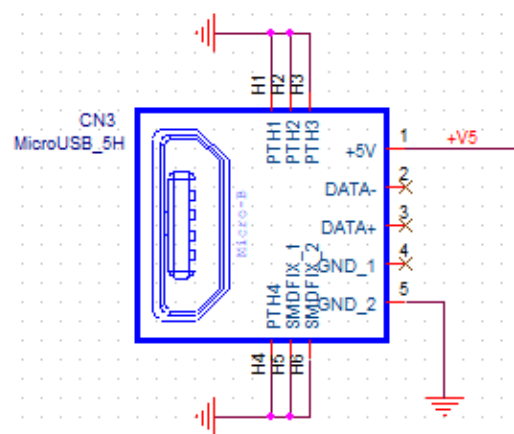
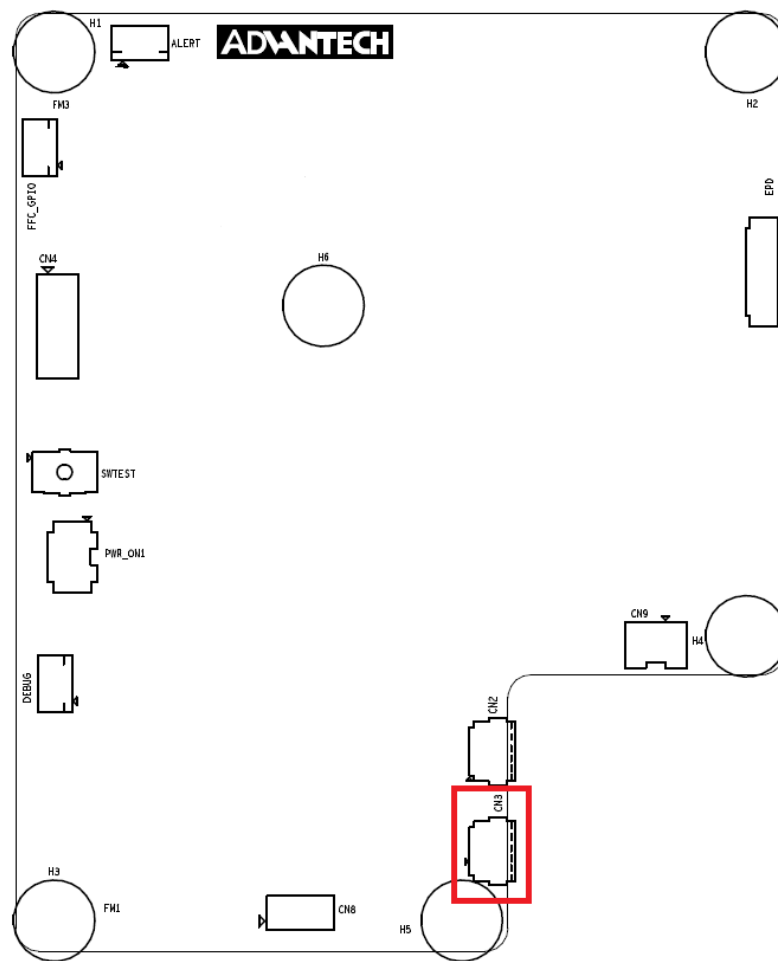


Table 2.3: CN3

PIN	PIN_NAME
1	+V5
2	N/A
3	N/A
4	N/A
5	GND

2.1.3 CN8

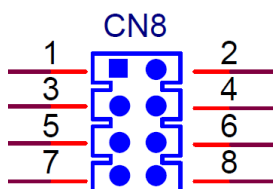
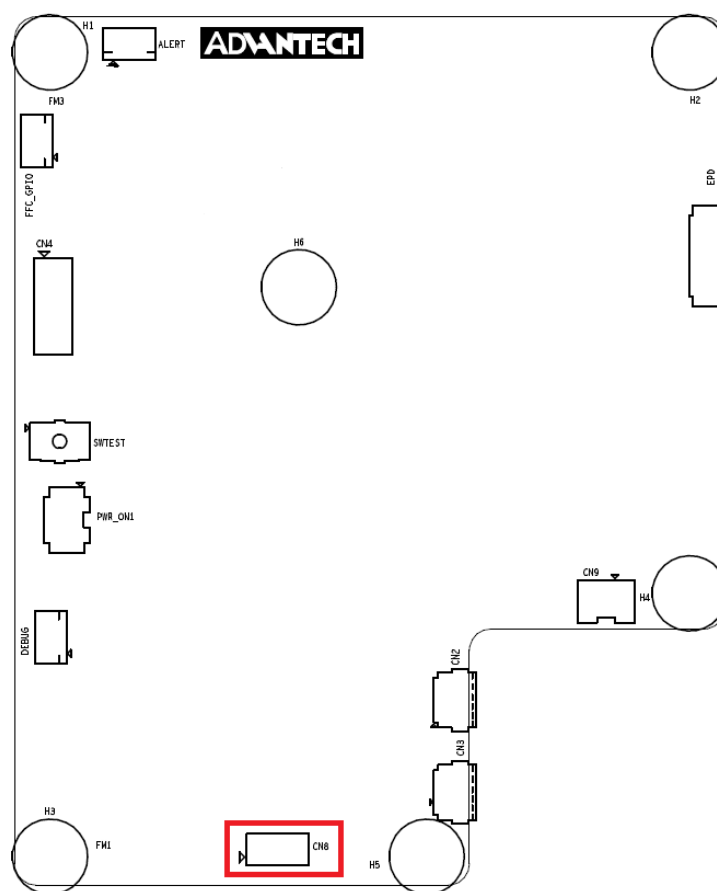


Table 2.4: CN8 (SPI PIN HEADER)

PIN	PIN_NAME	PIN	PIN_NAME
1	NC	2	SPI_CLK (Serial Clock)
3	NC	4	SPI_MOSI (Master Output, Slave Input)
5	NC	6	SPI_MISO (Master Input, Slave Output)
7	NC	8	SPI_CS0# (Slave Selected)

Serial Clock:

■ SCLK: SCK

Master Output → Slave Input (MOSI):

- SIMO, MTSR - corresponds to MOSI on both master and slave devices, connects to each other
- SDI, DI, DIN, SI - on slave devices; connects to MOSI on master, or to below connections
- SDO, DO, DOUT, SO - on master devices; connects to MOSI on slave, or to above connections

Master Input ← Slave Output (MISO):

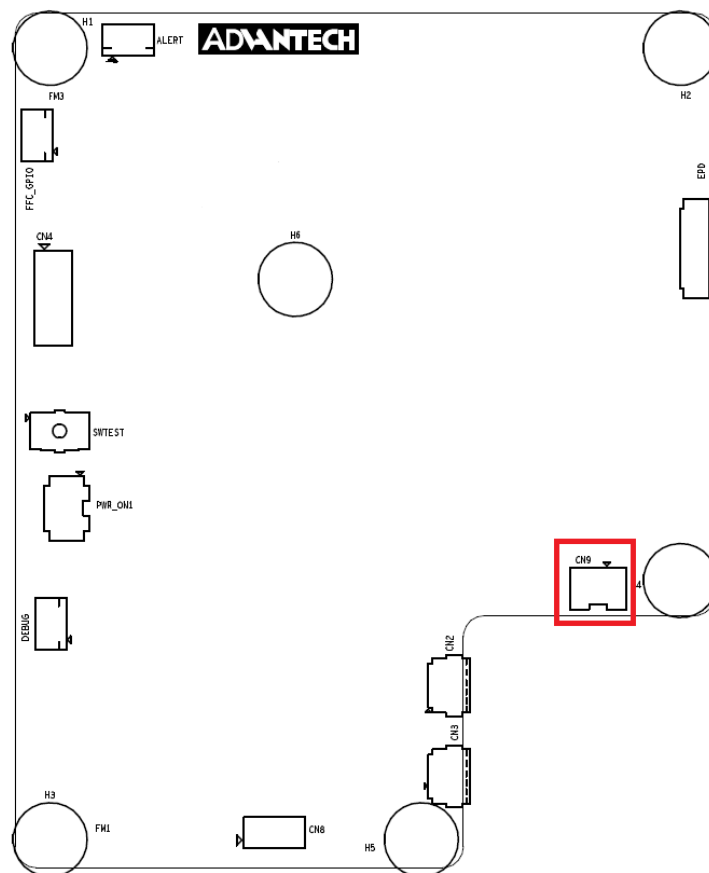
- SOMI, MRST - corresponds to MISO on both master and slave devices, connects to each other
- SDO, DO, DOUT, SO - on slave devices; connects to MISO on master, or to below connections
- SDI, DI, DIN, SI - on master devices; connects to MISO on slave, or to above connections

Slave Select:

- SS: SS, SSEL, CS, CS, CE, nSS, /SS, SS#

In other words, MOSI (or SDO on a master) connects to MOSI (or SDI on a slave). MISO (or SDI on a master) connects to MISO (or SDO on a slave). Slave Select is the same functionality as chip select and is used instead of an addressing concept. Pin names are always capitalized as in Slave Select, Serial Clock, and Master Output Slave Input.

2.1.4 CN9



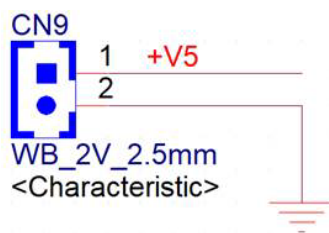
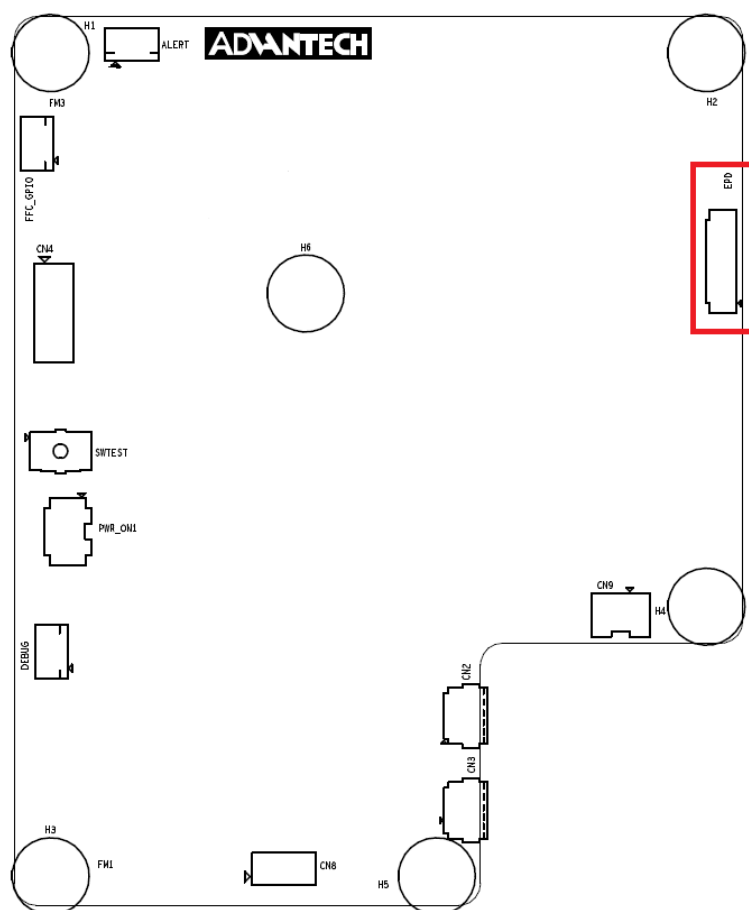


Table 2.5: CN9

PIN	PIN_NAME	PIN	PIN_NAME
1	+V5	2	GND

2.1.5 EPD Connector



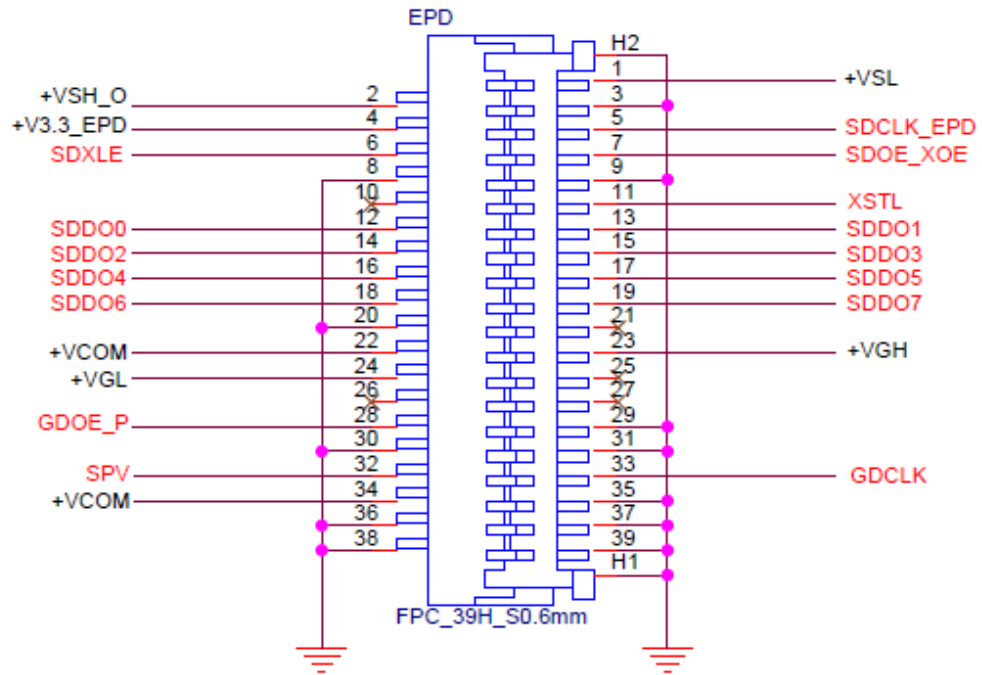


Table 2.6: EPD Connector

PIN	PIN_NAME	PIN	PIN_NAME
1	+VSL (Negative power supply source driver)	2	+VSH_O (Positive power supply source driver)
3	GND	4	+V3.3_EPD (3.3V)
5	SDCLK_EPD (Clock source driver)	6	SDXLE (Latch enable source driver)
7	SDOE_XOE (Output enable source driver)	8	GND
9	GND	10	NC
11	XSTL (Start pulse source driver)	12	SDDO0 (Data)
13	SDDO1 (Data)	14	SDDO2 (Data)
15	SDDO3 (Data)	16	SDDO4 (Data)
17	SDDO5 (Data)	18	SDDO6 (Data)
19	SDDO7 (Data)	20	GND
21	NC	22	+VCOM (Common connection)
23	+VGH (Positive power supply gate driver)	24	+VGL (Negative power supply gate driver)
25	NC	26	NC
27	NC	28	GDOE_P (Output mode selection gate driver)
29	GND	30	GND
31	GND	32	SPV (Start pulse gate driver)
33	GDCLK (Clock gate driver)	34	+VCOM (Common connection)
35	GND	36	GND
37	GND	38	GND
39	GND		

2.1.6 FFC_GPIO

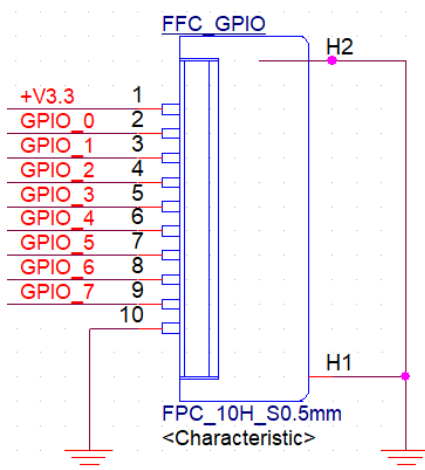
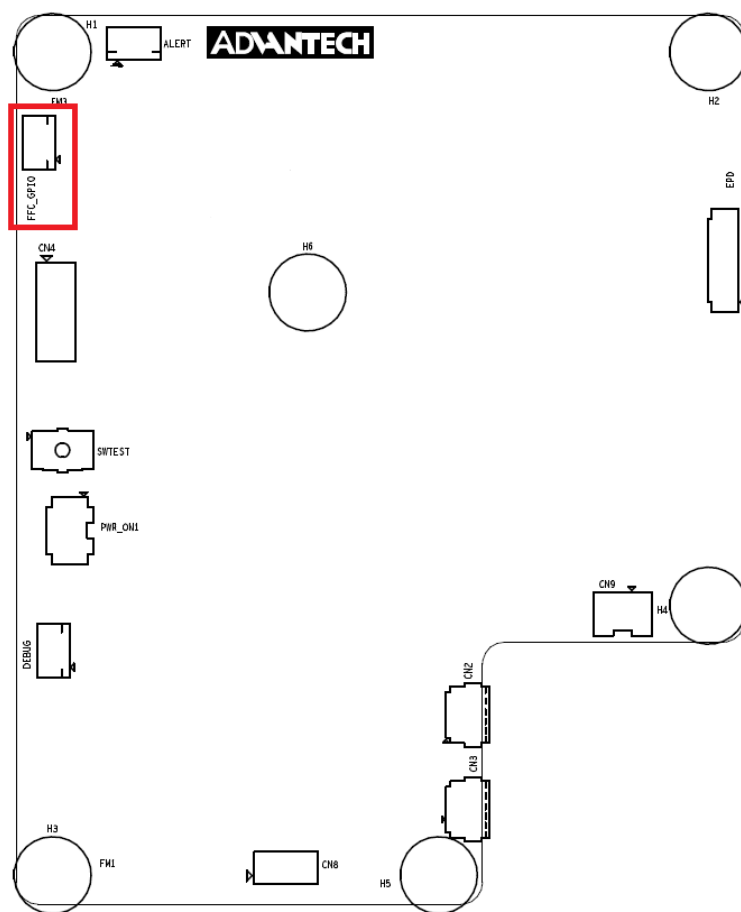


Table 2.7: FFC_GPIO

PIN	PIN_NAME	PIN	PIN_NAME
1	+V3.3	2	GPIO_0 (default LOW)
3	GPIO_1 (default LOW)	4	GPIO_2 (default LOW)
5	GPIO_3 (default LOW)	6	GPIO_4 (default LOW)
7	GPIO_5 (default LOW)	8	GPIO_6 (default LOW)
9	GPIO_7 (default LOW)	10	GND

GPIO Voltage level is 3.3V

2.1.7 DEBUG

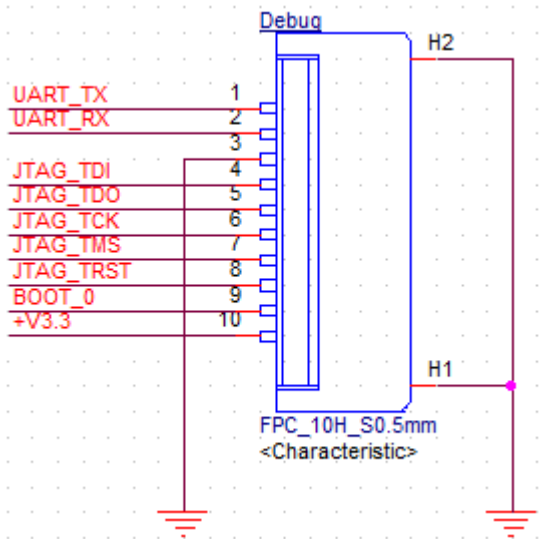
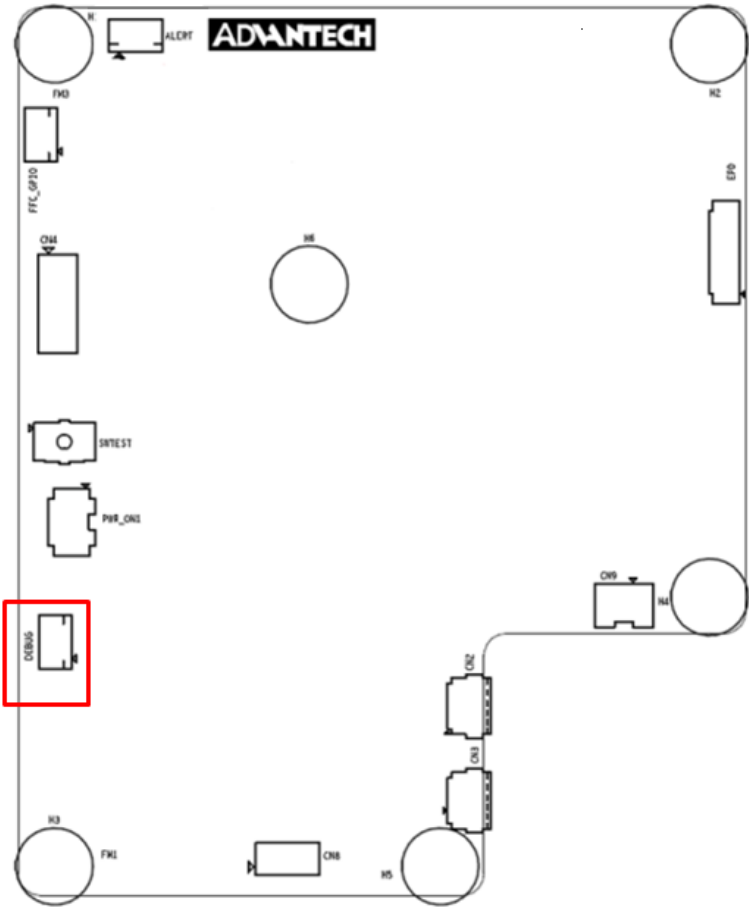


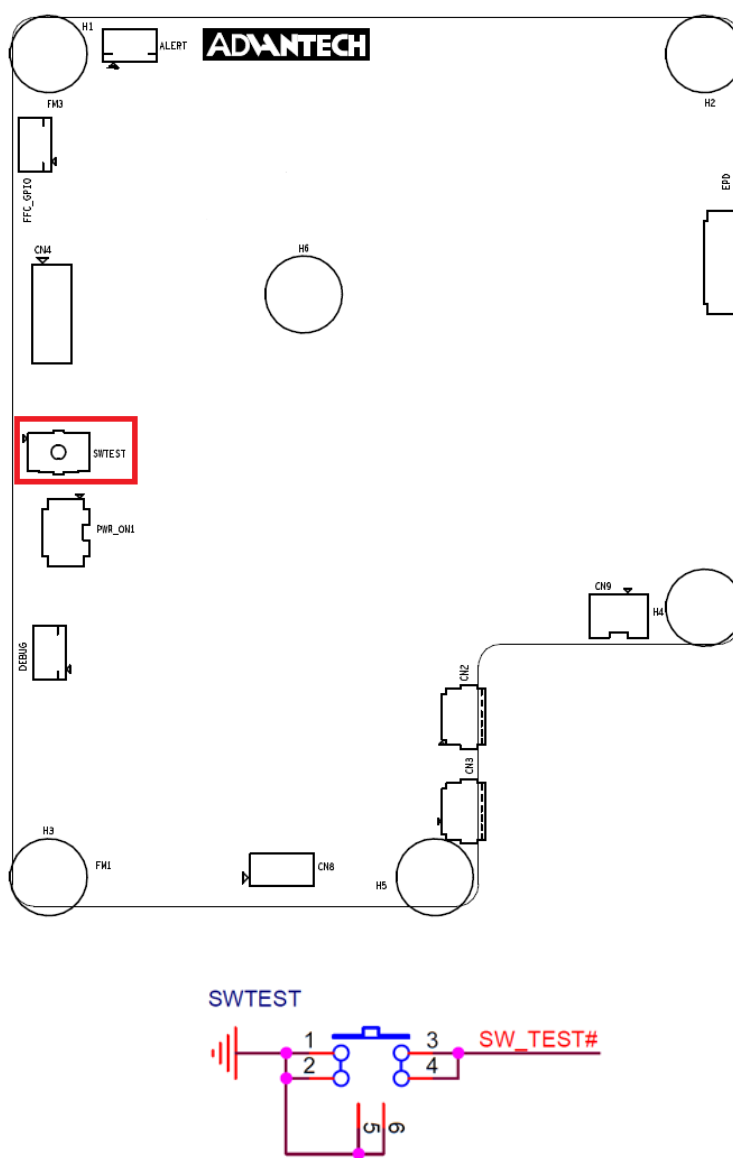
Table 2.8: DEBUG			
PIN	PIN_NAME	PIN	PIN_NAME
1	UART1_TX	2	UART1_RX
3	GND	4	JTAG_TDI
5	JTAG_TDO	6	JTAG_TCK
7	JTAG_TMS	8	JTAG_TRST

Table 2.8: DEBUG

9	BOOT_0	10	+V3.3_DEBUG
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1. **TDI** (Test Data In)
2. **TDO** (Test Data Out)
3. **TCK** (Test Clock)
4. **TMS** (Test Mode Select)
5. **TRST** (Test Reset) optional.

2.1.8 SWTEST

**Table 2.9: SWTEST**

PIN	PIN_NAME	PIN	PIN_NAME
1	GND	2	GND
3	SW_TEST#	4	SW_TEST#
5	GND	6	GND

2.1.9 PWR_ON1

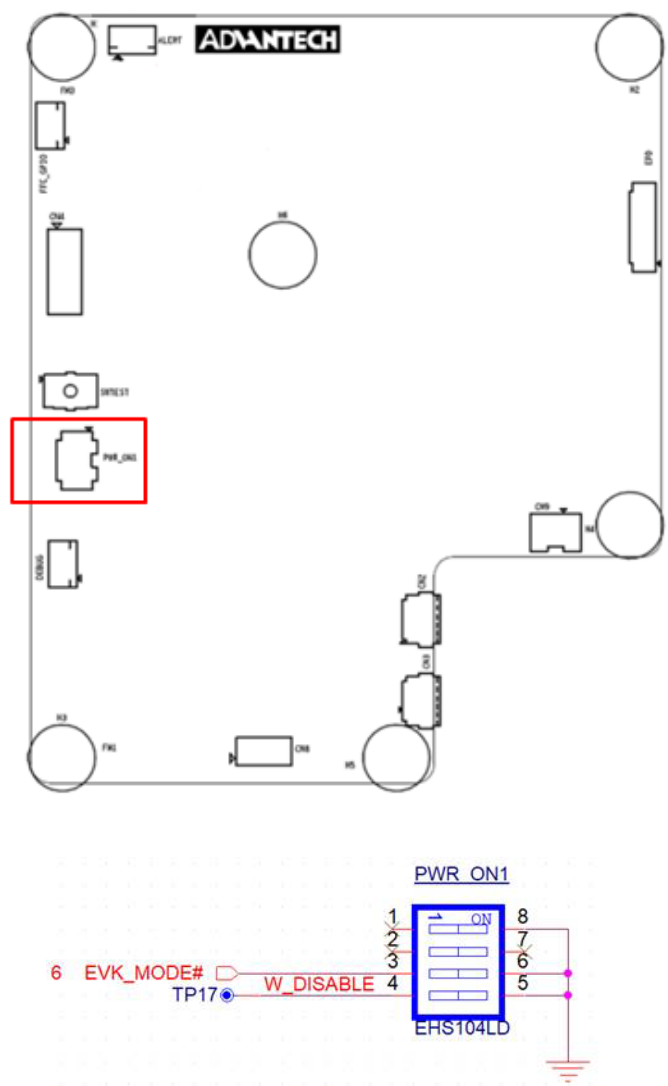


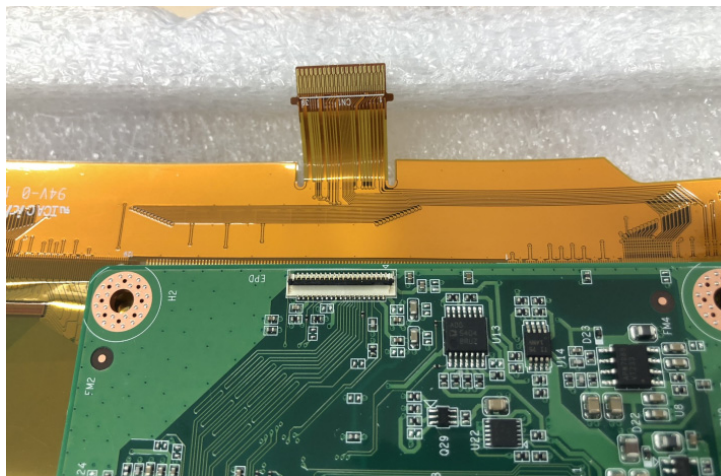
Table 2.10: PWR_ON1

PIN	PIN_NAME	PIN	PIN_NAME
1	NC: only for SW testing usage	2	NC: only for SW testing usage
3	EVK_MODE#	4	W_DISABLE: WiFi power on/off
	OFF		ON
1	NC		NC
2	NC		NC
3	BM22 mode		EVK mode
4	WIFI power ON		WIFI power OFF

2.1.10 Panel, PCBA Connector and USB Data Transmission Connector

1) Connected EPD FPC to mainboard

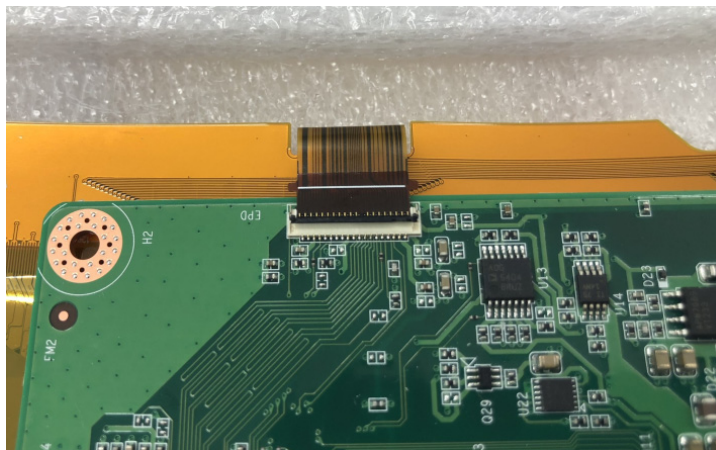
- Users can see the below FPC from the ePaper display



- Release rotary latch of the connector on the control board



- Blend the FPC carefully to the control board direction



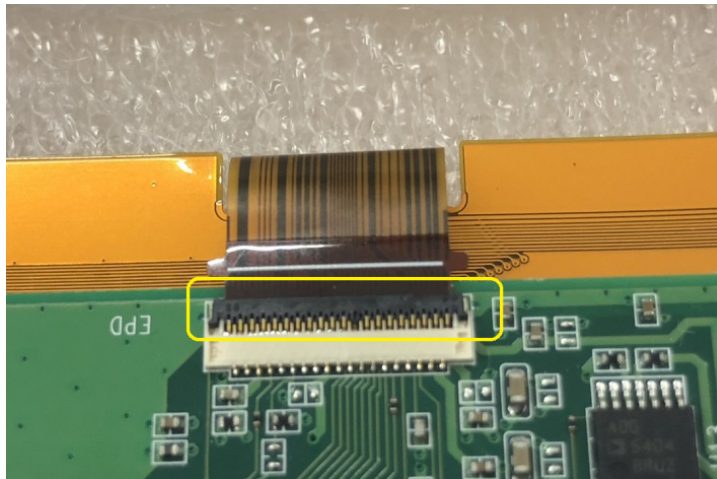
- Insert the FPC into the connector on control board



- After connecting steadily, lock the rotary latch

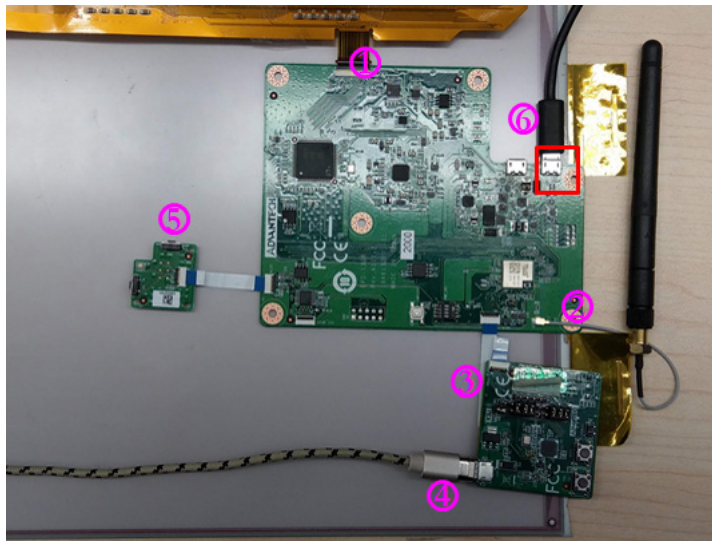


- Check if the connection is correct and tight.



Item2 in below figure: Connected Wi-Fi antenna to mainboard

Item6 in below figure : Connected power cable to mainboard USB(CN2)



Chapter 3

EPD Software
Development

3.1 Components List

3.1.1 HW Components List

Item	Description	Quantity
1	13.3" ePaper display	1
2	EPD-130 controller (PCBA)	1
3	USB cable	1
4	Host computer	1

3.1.2 SW Components List

Item	Description	Quantity
1	EPD-132R_CLItol to send out the image from host computer	1

3.2 System Architecture



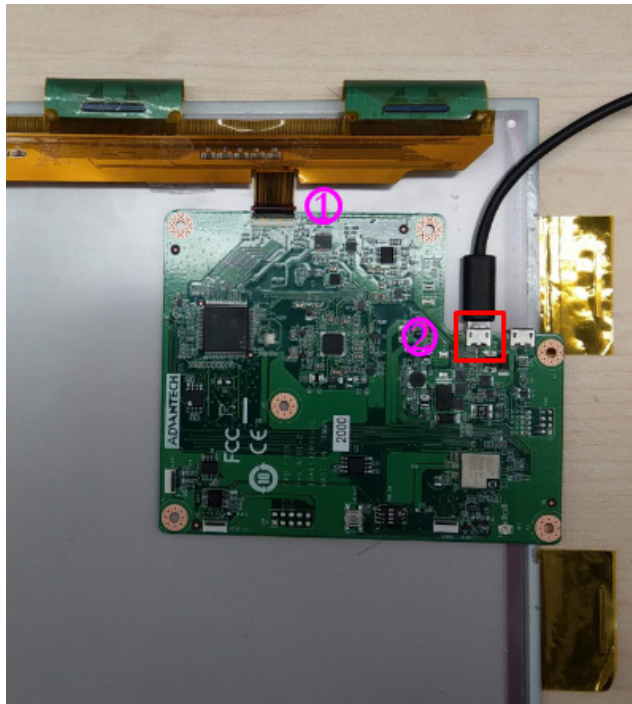
3.3 Tool And Development Environment Setup

1. Download and unzip EPD-132R_CLItol
2. Click "IT8951_FWVersion.bat" to get EPD panel information

3.4 Evaluation Kit Hands-On

Follow steps and picture below to setup the hardware

1. Connect EPD FPC to mainboard
2. Connect USB cable to mainboard USB2(CN2)



```

Administrator: Windows 命令處理程式
Searching for device in A:// ...
-I: No device connected.
Searching for device in B:// ...
-I: No device connected.
Searching for device in C:// ...
Device found.
DevName: SanDisk SDSSDXPS480G
Searching for device in D:// ...
Device found.
DevName: SanDisk SDSSDXPS480G
Searching for device in E:// ...
Device found.
DevName: MBED    UFS        0.1
Searching for device in F:// ...
Device found.
DevName: MBED    UFS        0.1
Searching for device in G:// ...
Searching for device in H:// ...
-I: No device connected.
Searching for device in I:// ...
Device found.
DevName: Generic Storage RamDisc 1.00
Panel width = 1600
Panel height = 1200
Image Buffer Address = 0x11C690
Getting FW version...
FW Version : Advantech_v.1.0
Done.
R:\EPD-132R_GLI>

```

3. Download and Refresh Image

- Click "IT8951_UpdateImage1.bat" to update "13.3inch-01.bmp" to EPD.
- Click "IT8951_UpdateImage2.bat" to update "13.3inch-02.bmp" to EPD.
- Open "IT8951_UpdateImage1.bat" and edit "13.3inch-02.bmp" for your image name.

*The image will not saved in flash

```
Administrator: Windows 命令處理程式
Searching for device in A:// ...
-1: No device connected.

Searching for device in B:// ...
-1: No device connected.

Searching for device in C:// ...
Device found.
DevName: SanDisk SDSDXPS480G

Searching for device in D:// ...
Device found.
DevName: SanDisk SDSDXPS480G

Searching for device in E:// ...
Device found.
DevName: MBED UFS 0.1

Searching for device in F:// ...
Device found.
DevName: MBED UFS 0.1

Searching for device in G:// ...

Searching for device in H:// ...
-1: No device connected.

Searching for device in I:// ...
Device found.
DevName: Generic Storage RamDisc 1.00
Panel width = 1600
Panel height = 1200
Image Buffer Address = 0x11C690

Getting FW version...
FW Version : Advantech_v.1.0
Done.

R:\EPD-132R CLI>
```

```
Administrator: Windows 命令處理程式
Searching for device in A:// ...
-1: No device connected.

Searching for device in B:// ...
-1: No device connected.

Searching for device in C:// ...
Device found.
DevName: SanDisk SDSDXPS480G

Searching for device in D:// ...
Device found.
DevName: SanDisk SDSDXPS480G

Searching for device in E:// ...
Device found.
DevName: MBED UFS 0.1

Searching for device in F:// ...
Device found.
DevName: MBED UFS 0.1

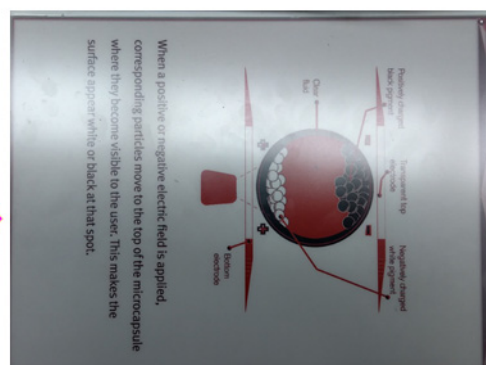
Searching for device in G:// ...

Searching for device in H:// ...

Searching for device in I:// ...
Device found.
DevName: Generic Storage RamDisc 1.00
Panel width = 1600
Panel height = 1200
Image Buffer Address = 0x11C690

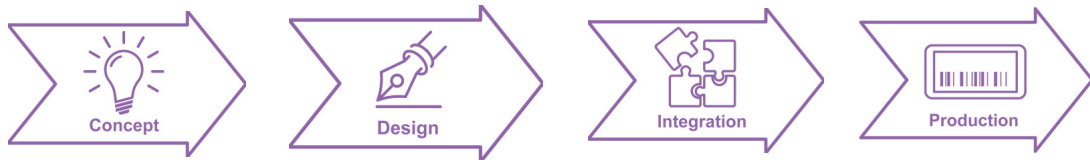
Displaying...
Arguments: "nvsuit, X:\I\U\H - 0\B\1600\1200, mode 2
Done.

R:\EPD-132R CLI>IT8951 USB Cmd.exe -load 13.3inch-02.jpg
```



Chapter 4

WISE-EC EPD Design-
In Service



4.1 The Acquisition of Information

Since ePaper is not a plug and play device, Advantech WISE-EC Design-in Services help customers reduce the time and work involved with designing a new ePaper device. Advantech handles the complexities of technical research and provides hardware and software integrated connectivity solutions to accelerate the implementation in a wide range of applications such as electronic shelf labelling, smart logistics, smart factories, smart hospitals, digital information signage, and smart transportation. Advantech not only provides the single end device but our end-to-end solutions include our ePaper Manager server, IoT gateway, and router.

With ePaper Manager, you can manage all information on ePaper devices in real-time. Remotely control all services to provide your customers with the latest information and have proper interactions with them. We also provide APIs to integrate data with your original management system. The below items are for service extensions for your end customers.

Full Centralized Control at a Glance

- Monitoring functions for low power etc
- Immediate/scheduling information to end users
- Control stock levels in stocktaking mode

Flexible Content Editor for Users

- Creation of templates with simple GUI
- Content previews for system management
- Auto-generated content by system
- Easily check product expiry dates

Finally, applying the EPD series solution, system integrators and developers can focus on their own application development with Advantech's reliable battery powered wireless ePaper display solutions.

4.1.1 Design

Design Guideline Support

- Multiple I/O extensions
- Customized industrial design
- Optical bonding to improving image quality

Wireless Conductive Measurement

- TX power / mask / RF harmonic tuning / RX sensitivity

When a product moves into the design stage, Advantech will supply a design guide of the EPD device for reference as well as Antenna selection & schematic review. The EPD device design guide provides onboard I/O definitions and recommendations of the industrial design, so customers can have a clear guideline to follow during their EPD device development. In addition, our team is able to assist customers to review the placement/layout and schematics to ensure the EPD device design meets their full requirements.

For software development, the Advantech WISE-EC software team can assist customers to establish an environment for software development and evaluate the amount of time and resources needed. If customers outsource software development to a 3rd party, Advantech can also cooperate with the 3rd party and provide proficient consulting services. With Advantech's professional support, the design process becomes much easier and product quality will be improved to meet required targets.

Design Assistance Service

Advantech provides a checklist for engineers for easily check their schematics and also review service based on customer carrier board schematics. These services are preventative and help to catch design errors before they happen. It helps to save a lot of time and cost with regard to developing carrier boards.

- Schematic review
- Placement and layout review
- Debugging assistance services
- General/special reference design database.

4.1.2 Integration

- Performance fine tuning
- SW integration from end-to-end
- Certification pre-scan
- Wireless & safety certification

Integration Stage

This phase comprises HW/SW integration, application development, and ePaper implementation. Due to the lack of knowledge and experience on platforms, customers need to spend a certain amount of time on analyzing integration problems. In addition, ePaper implementation has a lot to do with driver and signal communication which is not for a plug and play device. Therefore the customer has to learn from trial and error and to get the best solution with the least effort. Advantech's team has completed total standard HW/SW solutions to do performance fine tuning, driver integration and application-specific customization. Consequently, we can support customers with professional advice and information as well as by shortening development times and enabling more effective product integration.

Validation Stage

After customer's ES sample is completed, the next step is a series of verification steps. In addition to verifying a product's functionality, the related test of the product's efficiency and stability are also an important part at this stage especially. As a supportive role, Advantech primarily helps customers solve their problems in the testing process and will give suggestions and tips as well. Through an efficient verification process backed by our technical support, customers are able to optimize their applications with less fuss. Furthermore, Advantech's team can provide professional consulting services about further testing and equipment usage, so customers can find the right tools to efficiently identify and solve problems to further enhance their products quality and performance.

4.1.3 Production

- Production
- Worldwide logistics management
- Global repair service & RMA

Advantech has two manufacturing center in Taiwan and Kunshan to provide customized chassis assembly, testing services, packaging and labeling to meet customer special needs.

Customer can place an order via our smart and fast on-line system. With global peripheral procurement service and global logistics service, Advantech provide vertical integration in short lead time and competitive price for customers' one-stop shopping solutions, and then direct shipment to end users. After sales, a completed global repair service (RMA) take charge to provide device fully repairing service, and then execute efficient delivery.

4.2 Contact Information

Below is the contact information for Advantech customer service.

Region/Country	Contact Information
America	1-888-576-9688
Brazil	0800-770-5355
Mexico	01-800-467-2415
Europe (Toll Free)	00800-2426-8080
Singapore & SAP	65-64421000
Malaysia	1800-88-1809
Australia (Toll Free)	1300-308-531800-810-0345
China (Toll Free)	800-810-8389Sales@advantech.com.cn
India (Toll Free)	1-800-425-5071
Japan (Toll Free)	0800-500-1055
Korea (Toll Free)	080-363-9494
	080-363-9495
Taiwan (Toll Free)	0800-777-111
Russia (Toll Free)	8-800-555-01-50

Alternatively, you can reach our service team through the website listed below. Our technical support engineers will provide a quick response once the form is filled out:
http://www.advantech.com.tw/contact/default.aspx?page=contact_form2&subject=Technical+Support

4.3 Global Service Policy

4.3.1 Warranty Policy

Below is the warranty policy for Advantech products:

4.3.1.1 Warranty Period

Advantech branded off-the-shelf products and 3rd party off-the-shelf products used to assemble Advantech Configure to Order products are entitled to a 2 year complete and prompt global warranty service. Product defects in design, materials, and workmanship, are covered from the date of shipment.

All customized products will by default carry a 15 month regional warranty service. The actual product warranty terms and conditions may vary based on sales contract.

All 3rd party products purchased separately will be covered by the original manufacturer's warranty and time period, and shall not exceed one year of coverage through Advantech.

4.3.1.2 Repairs under Warranty

It is possible to obtain a replacement (Cross-Shipment) during the first 30 days of the purchase, thru your original ADVANTECH supplier to arrange DOA replacement if the products were purchased directly from ADVANTECH and the product is DOA (Dead-on-Arrival). The DOA Cross-Shipment excludes any shipping damage, customized and/or build-to-order products.

For those products which are not DOA, the return fee to an authorized ADVANTECH repair facility will be at the customers' expense. The shipping fee for reconstructive products from ADVANTECH back to customers' sites will be at ADVANTECH's expense.

4.3.1.3 Exclusions from Warranty

The product is excluded from warranty if

- The product has been found to be defective after expiry of the warranty period.
- Warranty has been voided by removal or alternation of product or part identification labels.
- The product has been misused, abused, or subjected to unauthorized disassembly/modification, placed in an unsuitable physical or operating environment; improperly maintained by the customer, or there is a failure of which ADVANTECH is not responsible whether by accident or another cause. Such conditions will be determined by ADVANTECH at its sole unfettered discretion.
- The product is damaged beyond repair due to a natural disaster such as a lightning strike, flood, earthquake, etc.
- Product updates/upgrades and tests upon the request of customers who are without warranty.

4.3.2 Repair Process

4.3.2.1 Obtaining an RMA Number

All returns from customers must be authorized with an ADVANTECH RMA (Return Merchandise Authorization) number. Any returns of defective units or parts without valid RMA numbers will not be accepted; they will be returned to the customer at the customer's cost without prior notice. An RMA number is only an authorization for returning a product; it is not an approval for repair or replacement. When requesting an RMA number, please access ADVANTECH's RMA web site: <http://erma.ADVANTECH.com.tw> with an authorized user ID and password.

You must fill out basic product and customer information and describe the problems encountered in detail in "Problem Description". Vague entries such as "does not work" and "failure" are not acceptable.

If you are uncertain about the cause of the problem, please contact ADVANTECH's Application Engineers (AE). They may be able to find a solution that does not require sending the product for repair.

The serial number of the whole set is required if only a key defective part is returned for repair. Otherwise, the case will be regarded as out-of-warranty.

4.3.2.2 Returning the Product for Repair

It's possible customers can save time and meet end-user requirements by returning defective products to an authorized ADVANTECH repair facility without an extra cross-region charge. It is required to contact the local repair center before offering global repair service.

It is recommended to send cards without accessories (manuals, cables, etc.). Remove any unnecessary components from the card, such as CPU, DRAM, and CF Card. If you send all these parts back (because you believe they may be part of the problem), please note clearly that they are included. Otherwise, ADVANTECH is not responsible for any items not listed. Make sure the "Problem Description" is enclosed.

European customers that are located outside European Community are requested to use UPS as the forwarding company. We strongly recommend adding a packing list to all shipments. Please prepare a shipment invoice according to the following guidelines to decrease goods clearance time:

1. Give a low value to the product on the invoice, or additional charges will be levied by customs that will be borne by the sender.
2. Add information "Invoice for customs purposes only with no commercial value" on the shipment invoice.
3. Show RMA numbers, product serial numbers and warranty status on the shipment invoice.
4. Add information about Country of origin of goods

In addition, please attach an invoice with RMA number to the carton, then write the RMA number on the outside of the carton and attach the packing slip to save handling time. Please also address the parts directly to the Service Department and mark the package "Attn. RMA Service Department".

All products must be returned in properly packed ESD material or anti-static bags. ADVANTECH reserves the right to return non-repaired items at the customer's cost if inappropriately packed.

Besides that, "Door-to-Door" transportation such as speed post is recommended for delivery, otherwise, the sender should bear additional charges such as clearance fees if Air-Cargo is adopted.

Should DOA cases fail, ADVANTECH will take full responsibility for the product and transportation charges. If the items are not DOA, but fail within warranty, the sender will bear the freight charges. For out-of-warranty cases, customers must cover the cost and take care of both outward and inward transportation.

4.3.2.3 Service Charges

The product is excluded from warranty if:

- The product is repaired after expiry of the warranty period.
- The product is tested or calibrated after expiry of the warranty period, and a No Problem Found (NPF) result is obtained.
- The product, though repaired within the warranty period, has been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which ADVANTECH is not responsible whether by accident or other cause. Such conditions will be determined by ADVANTECH at its sole unfettered discretion.
- The product is damaged beyond repair due to a natural disaster such as a lightning strike, flood, earthquake, etc.
- Product updates and tests upon the request of customers who are without warranty.

If a product has been repaired by ADVANTECH, and within three months after such a repair the product requires another repair for the same problem, ADVANTECH will do this repair free of charge. However, such free repairs do not apply to products which have been misused, abused, or subjected to unauthorized disassembly/modification; placed in an unsuitable physical or operating environment; improperly maintained by the customer; or failure caused which ADVANTECH is not responsible whether by accident or other cause.

Please contact your nearest regional service center for detail service quotation.

Before we start out-of-warranty repairs, we will send you a pro forma invoice (P/I) with the repair charges. When you remit the funds, please reference the P/I number listed under "Our Ref". ADVANTECH reserves the right to deny repair services to customers that do not return the DOA unit or sign the P/I. Meanwhile, ADVANTECH will scrap defective products without prior notice if customers do not return the signed P/I within 3 months.

4.3.2.4 Repair Report

ADVANTECH returns each product with a "Repair Report" which shows the result of the repair. A "Repair Analysis Report" is also provided to customers upon request. If the defect is not caused by ADVANTECH design or manufacturing, customers will be charged US\$60 or US\$120 for in-warranty or out-of-warranty repair analysis reports respectively.

4.3.2.5 Custody of Products Submitted for Repair

ADVANTECH will retain custody of a product submitted for repair for one month while it is waiting for return of a signed P/I or payment (A/R). If the customer fails to respond within such period, ADVANTECH will close the case automatically. ADVANTECH will take reasonable measures to stay in proper contact with the customer during this one month period.

4.3.2.6 Shipping Back to Customer

The forwarding company for RMA returns from ADVANTECH to customers is selected by ADVANTECH. Per customer requirement, other express services can be adopted, such as UPS, FedEx and etc. The customer must bear the extra costs of such alternative shipment. If you require any special arrangements, please indicate this when shipping the product to us.



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