



## § SPECIFICATION APPROVAL SHEET §

**Fdt Tech Module No. :** FP104SIA2x-00R

**Description :** 10.4" Digital TFT-LCD Module

**SPEC No. :** SAS-1506013

**Version :** 1.0

**Issue Date :** July 21, 2015

※ This approval sheet contains 21 pages including the cover and appendix.

<b>Customer :</b>  <b>Date :</b> /     / 15	<b>Approved By :</b>
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**Checked By :**

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**Designed By :**

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## 1. General Description

FDT Smart Graphic TFT Module Plus is a unique TFT LCD module which builds graphic and character inside. It provides user to present customized & full color graphics or characters without any SOC or IPC system. In addition, user can update or upload his graphics or characters via Micro SD slot by himself. FDT Smart Graphic TFT Module not only enhances your product values also saves your cost.

### 1.1 Features

- Friendly and Free Development Environment
- Multi-layer design
- Advanced GUI function
- Easy Touch Effects
- Multi-Language (Unicode)
- Easy and fast update image with Micro SD
- Single Operation Voltage +5V
- Built-in Real Time Clock / Buzzer
- LED Backlight Brightness Control
- RAM Support 16MB / Flash Memory 256MB
- 4Wires RTP Touch Support
- Serial Communication: UART/RS232
- Low Power Consumption / High reliability

### 1.2 Application

- Industrial controller
- Medical Equipment
- Security Equipment
- Simple Function Equipment

## 2. Contents

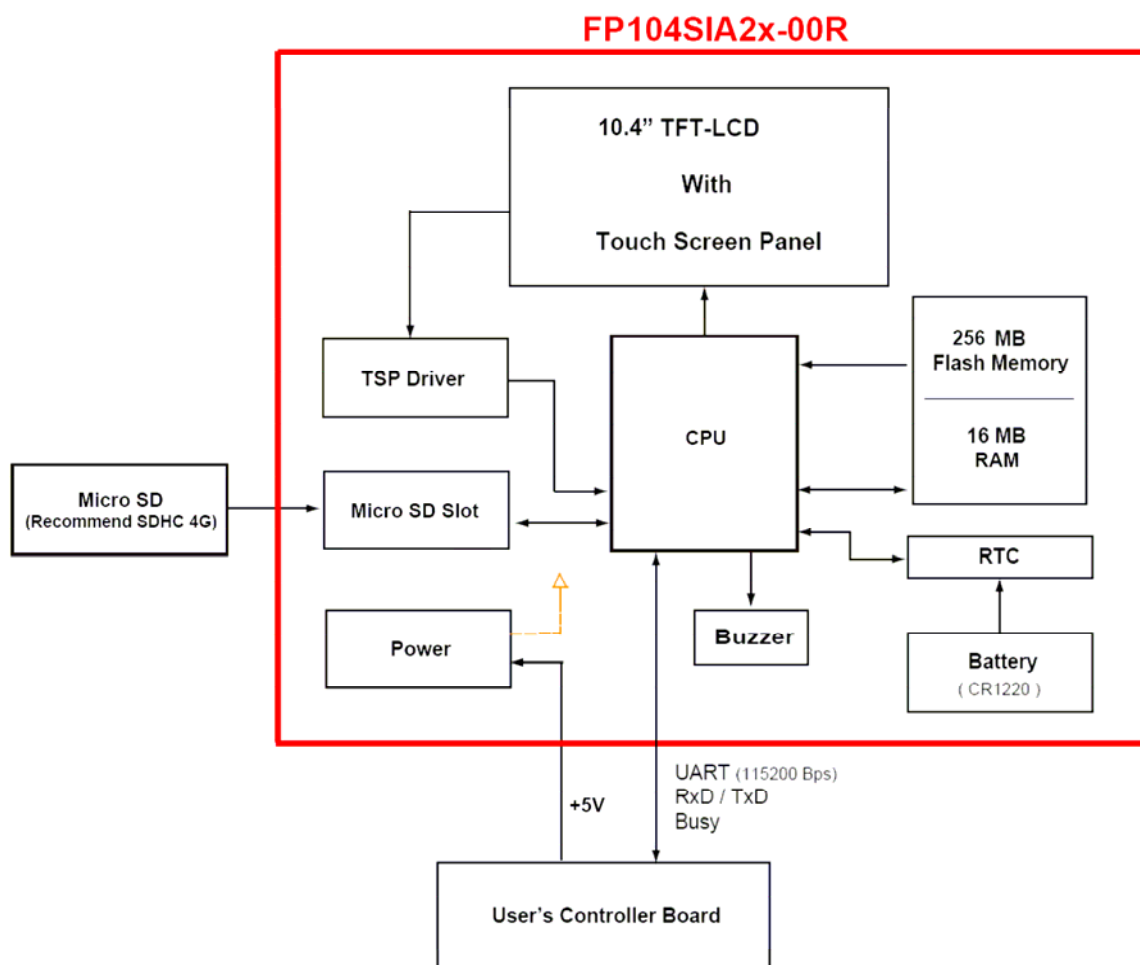
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## 3. Block Diagram

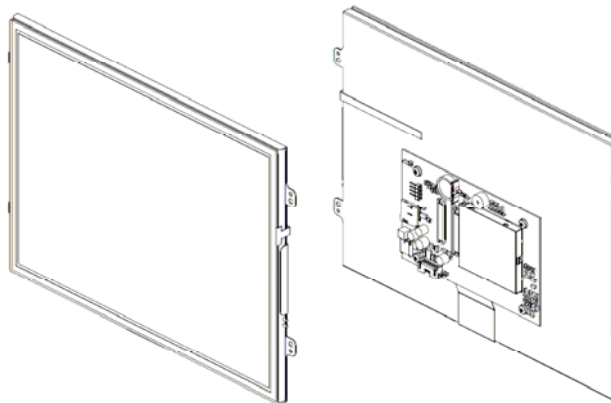
### 3.1 Block Diagram



## 4. Order Information

### 4.1 Unit

#### Unit



Parameter	FP104SIA20-00R	FP104SIA24-00R	Unit	Remark
RTC	⊙	⊙		
Touch Screen Function	-	4W Resistance		
Buzzer Function	⊙	⊙		
Weight	720	805	g	±10%

**Note:** The assembling of panel and bracket is aimed for delivery, packaging and experiment. If the demand of shockproof and long-term fix, pls have it into consideration of mechanism design.

### 4.2 Power Cable (Option)

#### Power Cable



Order Part Number	Pin Description	Remark
LACABLE008-FDR	7P 2.0mm - 4P1.25mm - 5.5mm-DC Jack	

## 5. Specifications

Parameter	Specifications	Unit	Remark
Communication Protocol	Duplex Transmission (UART)		
	UART Transmission Rate	115200 (max.921600bps)	Bps
	Data Bit	8	Bits
	Parity Bit Check	NO	
	Stop Bit	1	Bit
Micro SD Slot	Recommend SDHC 4G		
Flash Memory	256M	Bytes	Note1
RAM	16M	Bytes	Note2
Picture Format	BMP Category		

**Note 1: Storage memory for Icons, Pictures, Fonts and configure.**

**Note 2: GUI cache memory**

## 6. Absolute Maximum Ratings

### 6.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	Vin	+4.2	+5.7	V	
Digital Input Signal	TTL	+0.3	+3.6	V	
Operating Temperature Without TSP		-10	+50	°C	
Operating Temperature With TSP		-10	+50	°C	
Storage Temperature Without TSP		-20	+60	°C	
Storage Temperature With TSP		-20	+60	°C	

7. Recommended operating conditions

7.1 Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input Voltage	Vin	+4.5	+5	+5.5	V	
Total Current	Iin (+5V)	-	760	-	mA	±15%
Power Consumption		-	3.8	-	W	@5V
I/O	TTL	+0.1	-	+3.3	V	

8. TFT-LCD Information

8.1 TFT-LCD Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	10.4" (Diagonal)	inch
Display Format	800 x (R.G.B) x 600	dot
Active Area	211.20 (W) x 158.40 (H)	mm
Surface Treatment	Anti-Glare	

8.2 TFT-LCD Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Left	60	70	---	deg	
		Right	60	70	---	deg	
	Vertical	Top	40	50	---	deg	
		Bottom	50	60	---	deg	
Contrast Ratio	CR	At optimized Viewing angle	300	500	---	---	
Brightness Without TSP	L	$\Theta = 0^\circ / \phi = 0$	200	250	---	cd/m <sup>2</sup>	
Brightness With TSP	L	$\Theta = 0^\circ / \phi = 0$	160	200	---	cd/m <sup>2</sup>	
LED Life Time	---	T <sub>a</sub> =+25°C	20000	---	---	Hrs	I <sub>L</sub> =240mA



## 9. Pin Description

### 9.1 J107A Pin Assignment of Signal Input (Pitch 2.0mm 7Pin, Side Entry Type)

- ※ FDT Connector Part No.: S7B-PH-K-S (JST) or [Same as M24267R (STM)];  
FDT Matching Connector Part No.: PHR-7 (JST) or [Same as P24267 (STM)]

Pin No	Symbol	I/O	Description	Remark
1	VCC5V	-	+5V Input Voltage	DC
2	VCC5V	-	+5V Input Voltage	DC
3	GND	-	Ground	
4	GND	-	Ground	
5	BUSY	O	Busy status	High (3.3V): Busy Low (0V): Normal (Note1,2)
6	RXD	I	Receive Data (UART)	TTL Level RS-232 (3.3V)
7	TXD	O	Transmit Data (UART)	TTL Level RS-232 (3.3V)

Note: 1.Your application circuit board must be connects with busy pin of SGM.

2.Busy circuit of the SGM (Fig.9-1)

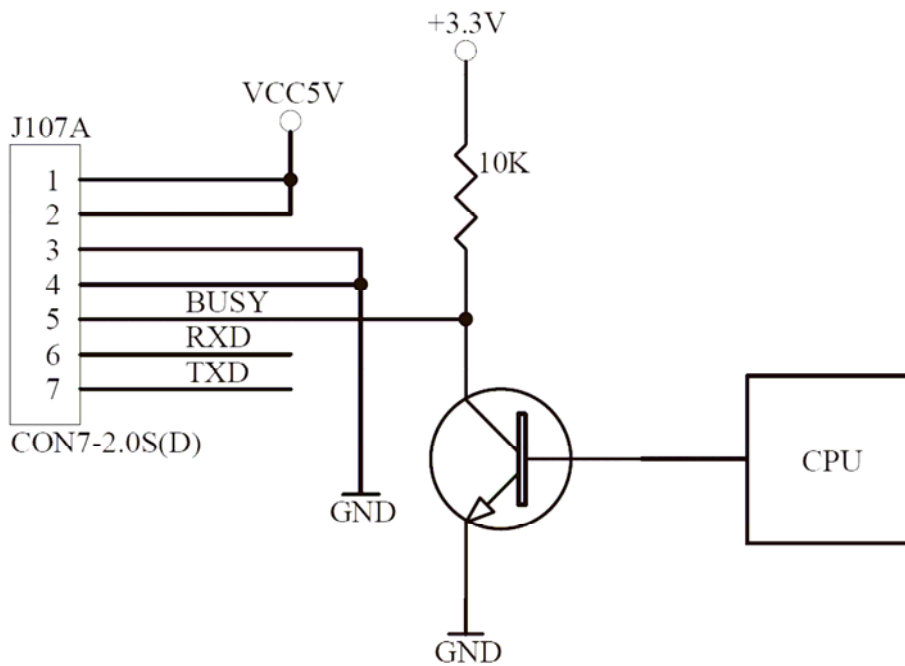
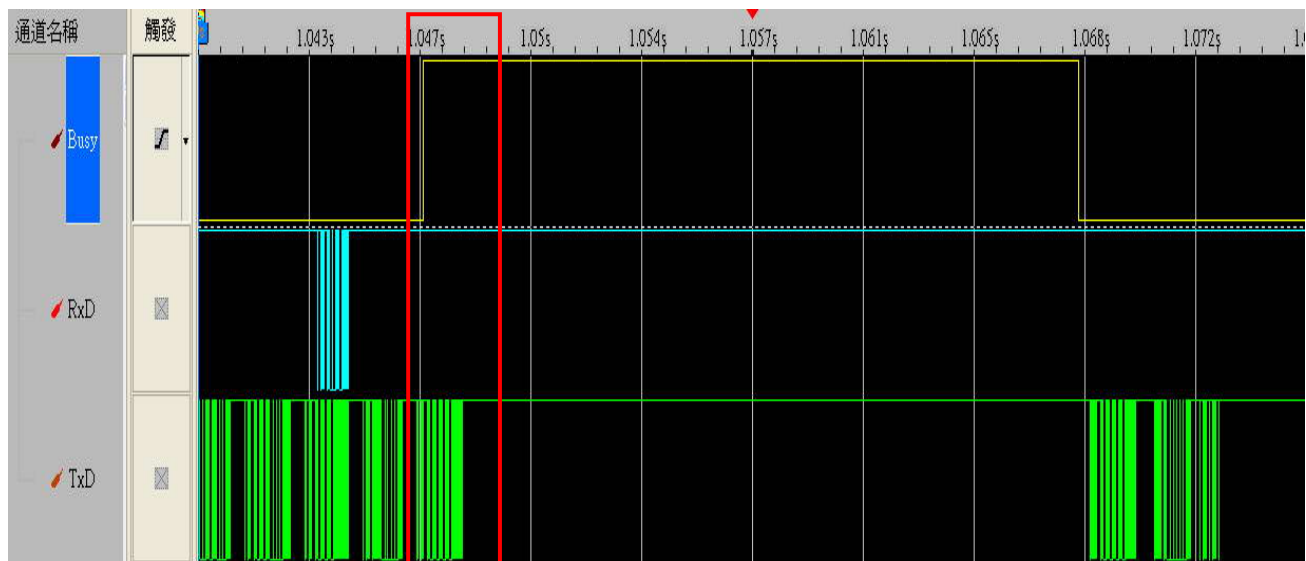


Fig.9-1

## 9.2 UART Timing Chart (Client side)



※ If busy signal of SGM appears on the duration of client processor transmission command.  
Please don't worry this situation and goes on last command procedure.

## 10. 4W Resistance Touch Panel Characteristics

### 10.1 Optical Performance

Parameter	Specifications
Transmittance	$\geq 80\%$ Typ.
Haze	$\leq 4\%$

### 10.2 Mechanical Performance

Parameter	Specifications
Input Method	Finger or stylus pen
Operating Force	Max: 110g
Surface Hardness	3H or more

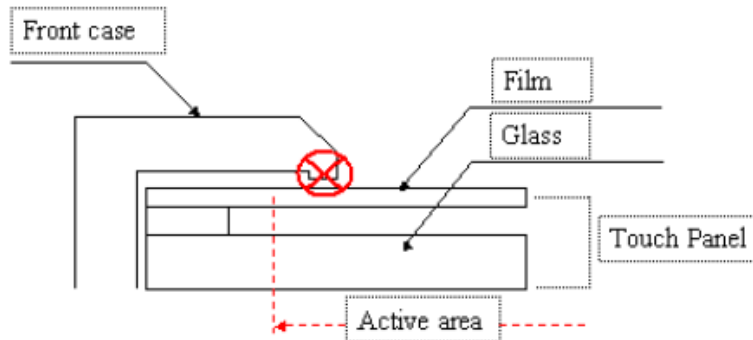
### 10.3 Durability Performance

Parameter	Specifications
Expected Life Performance	Operation tested to greater than 1 million touches in one location without failure, with a head of R6.5 and hardness Hs 60 stylus.

**10.4 Touch Screen Integration Design Guide**

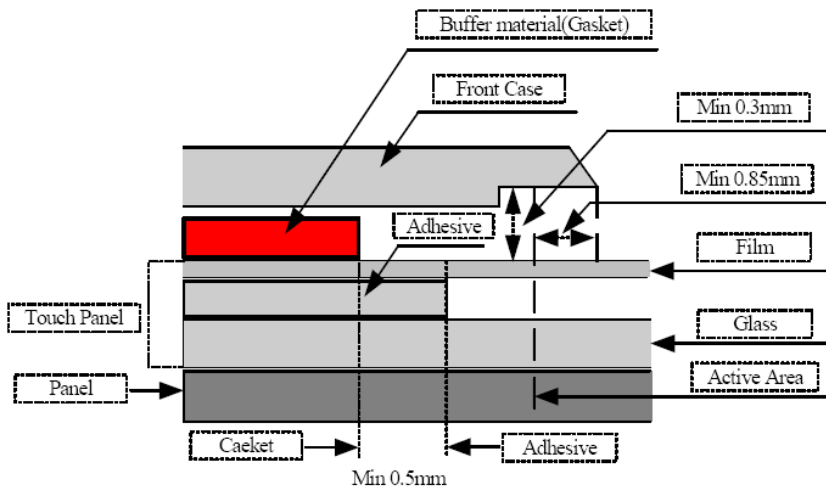
Avoid the design that Front-case overlap and press on the active area of the touch-panel.

Give enough gap (over 0.5mm at compressed) between the front case and touch-panel to protect wrong operating.



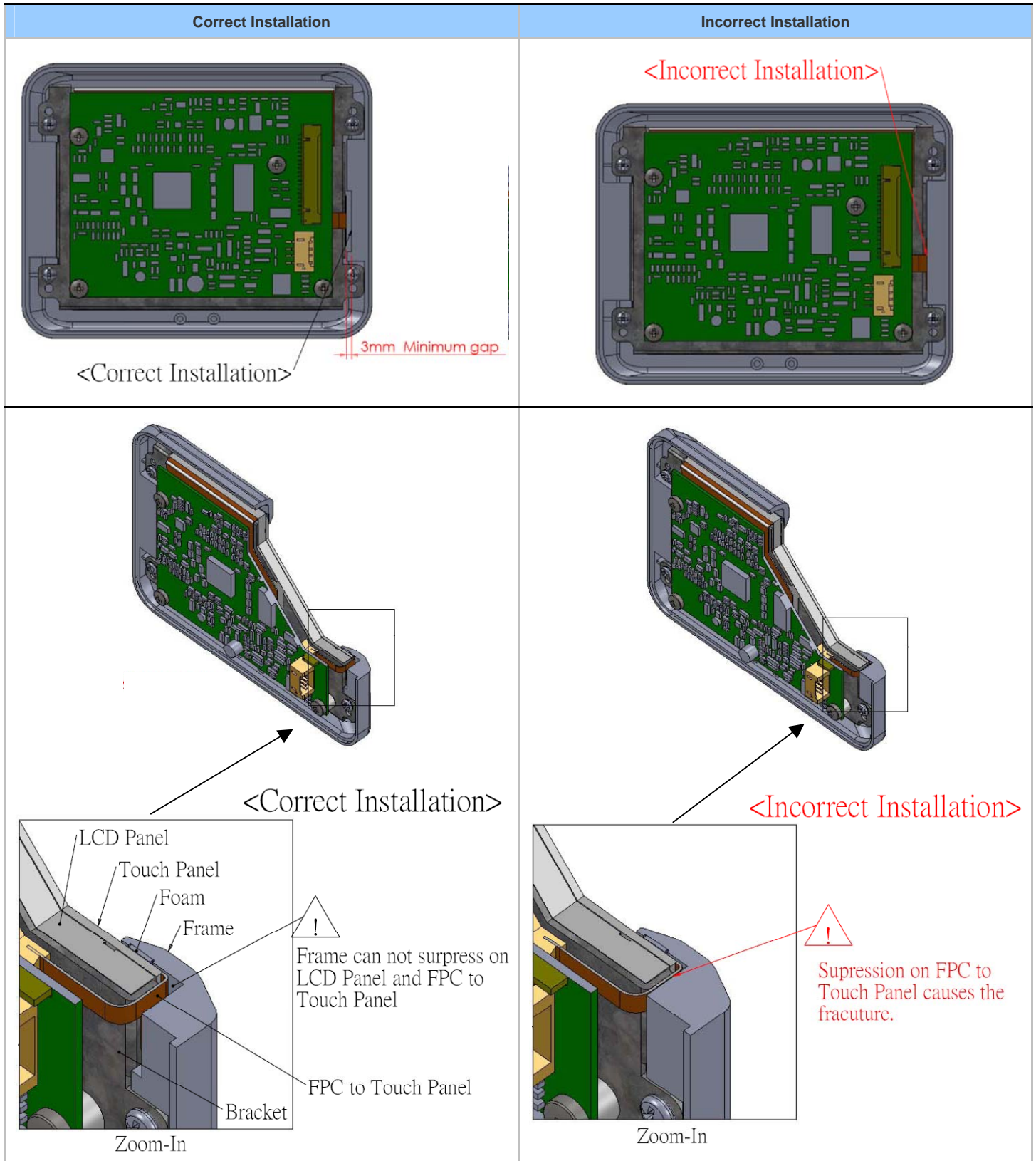
Use a buffer material (Gasket) between the touch-panel and front-case to protect damage and wrong operating.

Avoid the design that buffer material overlap and press on the inside of touch-panel viewing area.



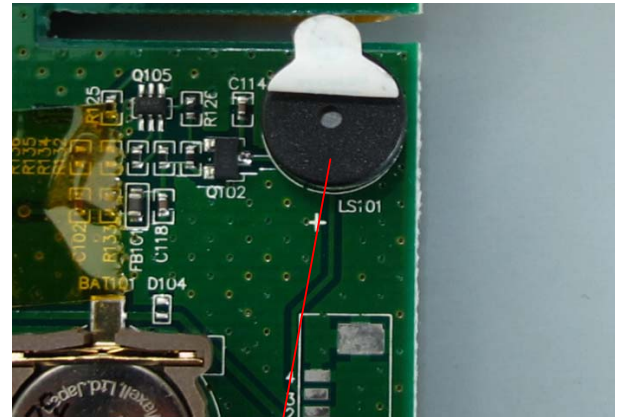
**Note: We strongly suggest to follow above design guide to avoid the linear defect happened on the touch panel.**

**10.5 Mechanical Design Notice For Touch Panel**



## 11. Buzzer Notice

### 11.1 Remove Buzzer Label



**Remove**



**12. Built –in Project Directions**

**12.1 Operation explaining**

The SGM Plus module delivery is included a project.

How to use that please refer to the document as “Module\_Demo\_User\_Guide.pdf”

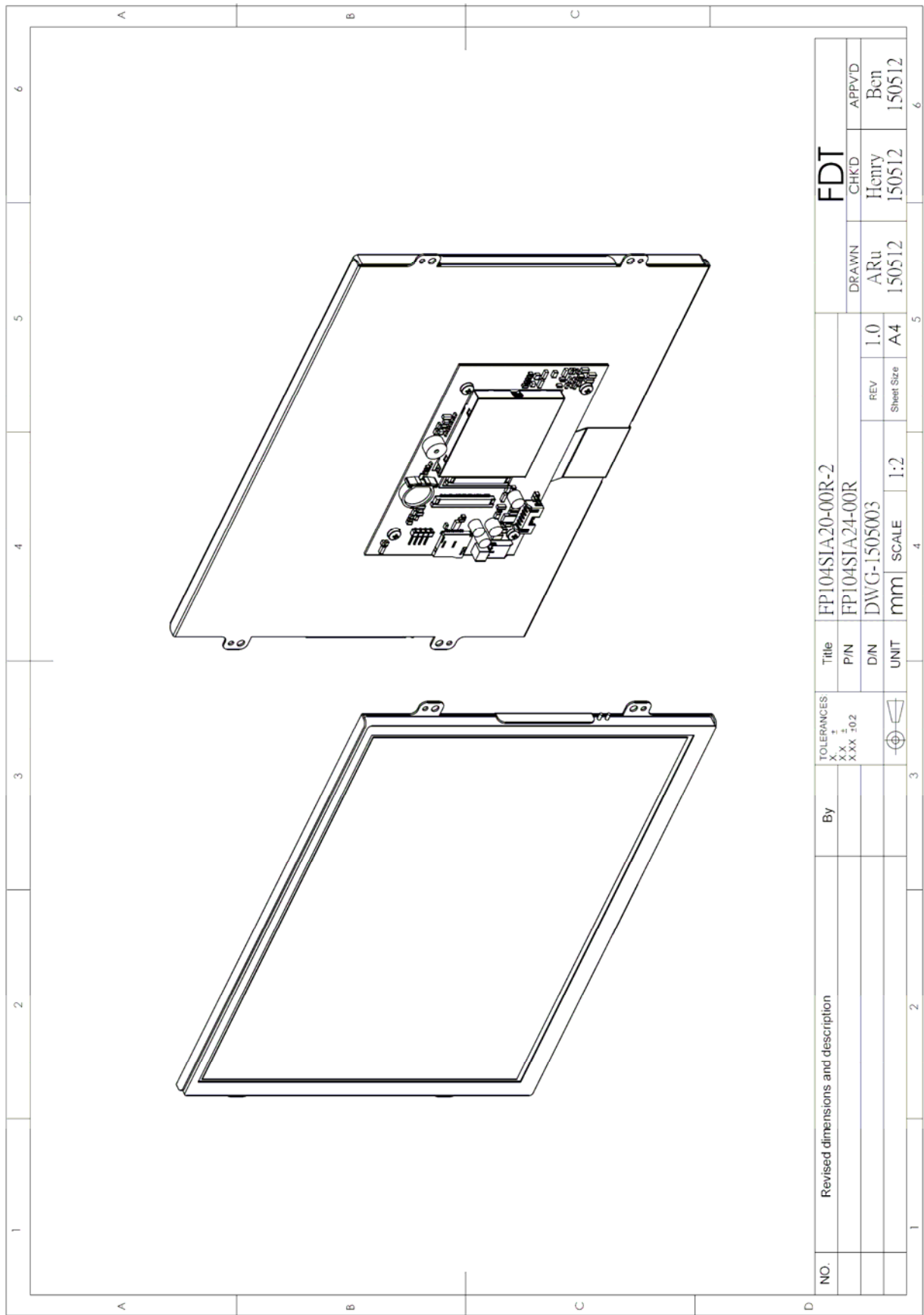
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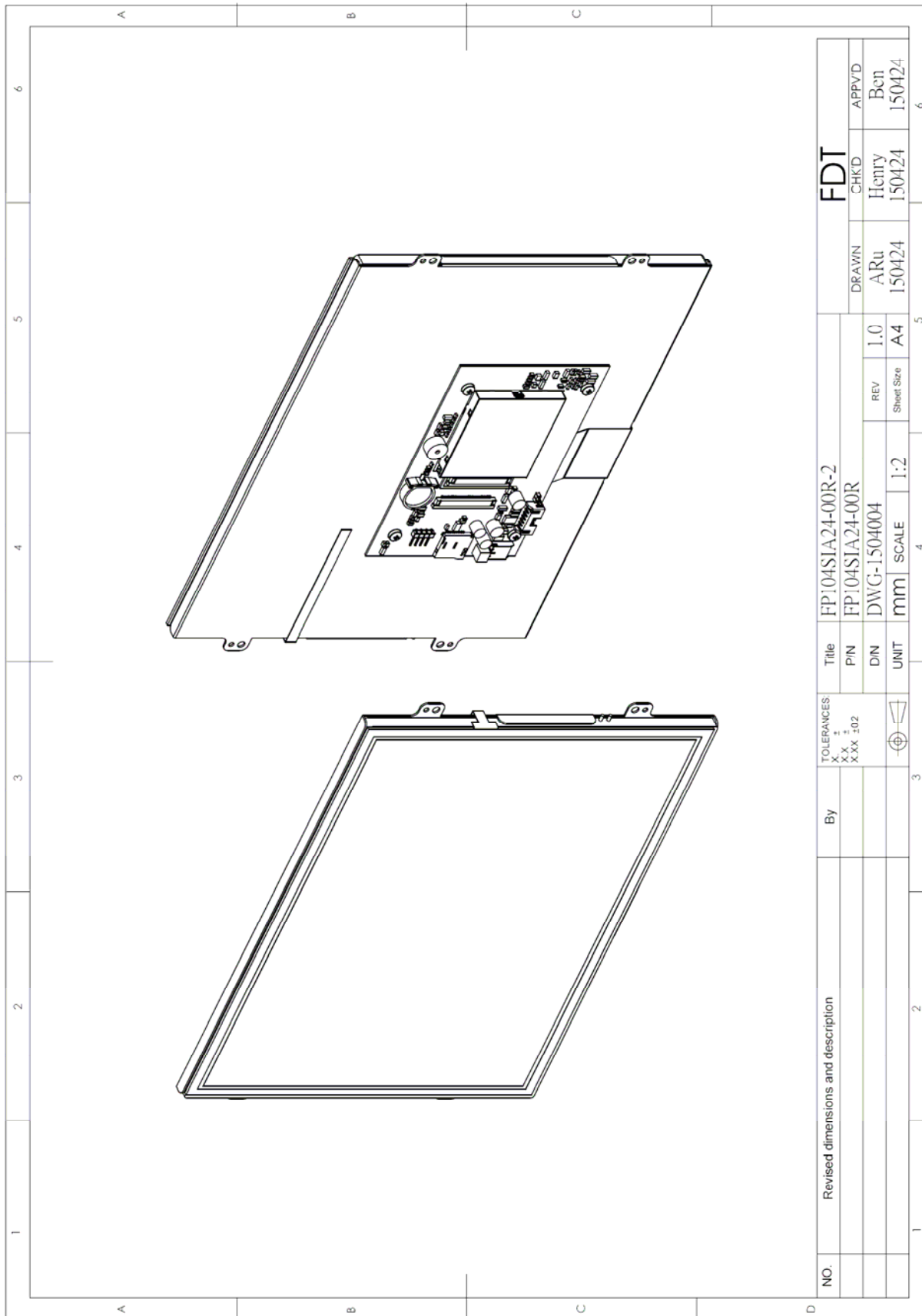


**13.2 Unit (FP104SIA20-00R -2)**





**13.4 Unit (FP104SIA24-00R -2)**



NO.	Revised dimensions and description	By	TOLERANCES: X.X ± X.X ±.02	Title	FP104SIA24-00R-2	FDT	
				PIN	FP104SIA24-00R	DRAWN	CHKD
				DN	DWG-1504004	ARu	Hcnry
				UNIT	mm	150424	150424
				SCALE	1:2	REV	Bcn
						1.0	150424
						A4	150424
						Sheet Size	

14. Accessory

14.1 LACABLE008-FDR (Option)

