§ SPECIFICATION APPROVAL SHEET §

Fdt Tech Module No.： FP035QIA1x-00R

Description： 3.5” Digital TFT-LCD Module

SPEC No.： SAS-1506011

Version： 1.0

Issue Date： July 17, 2015

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

Customer： Date：　/　/　15	Approved By：

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1. General Description

FDT Smart Graphic TFT Module Plus is an 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 8MB / Flash Memory 128MB
- 4Wires RTP Touch Support
- Serial Communication: UART/RS232
- Low Power Consumption / High reliability

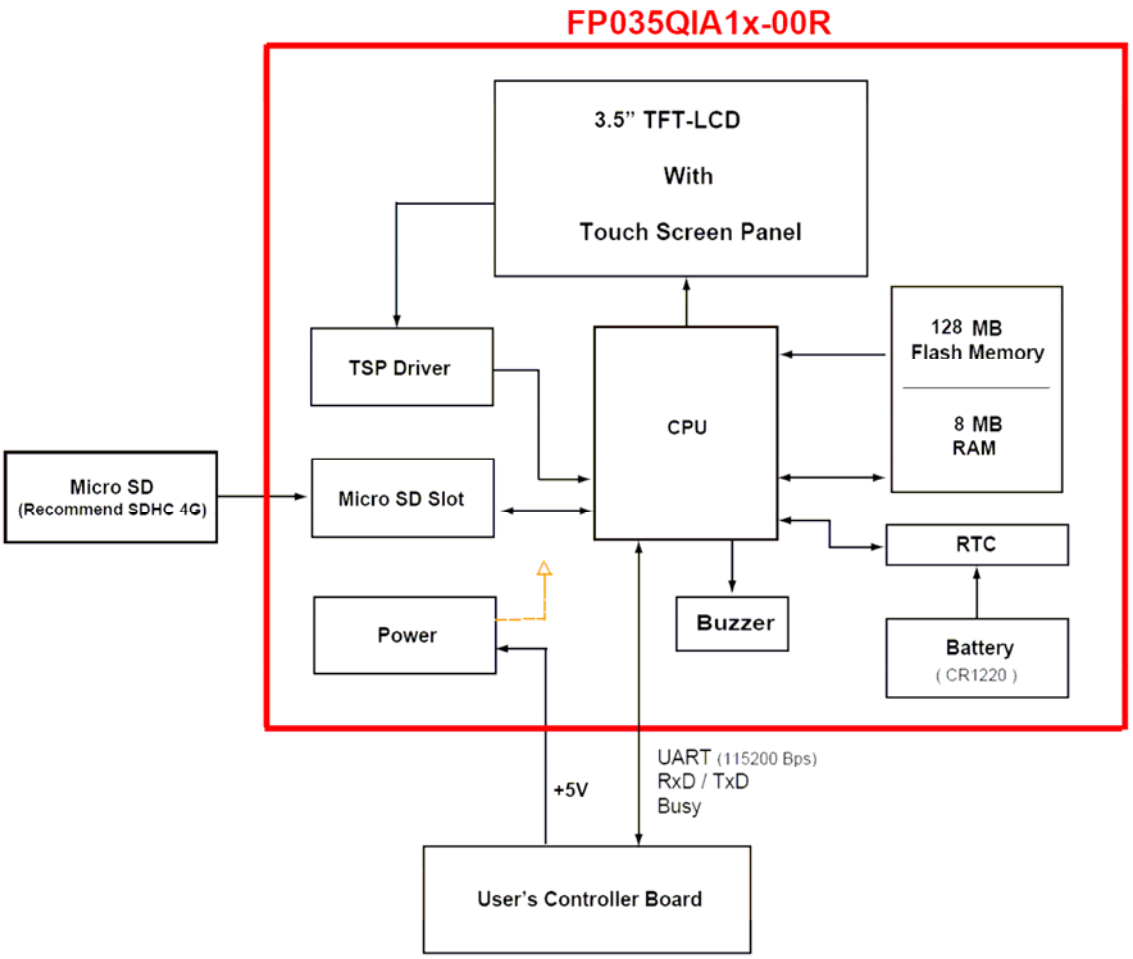
1.2 Application

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

2. Contents

3. Block Diagram

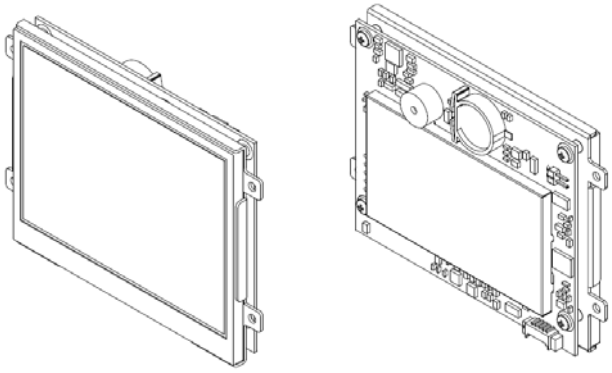
3.1 Block Diagram



4. Order Information

4.1 Unit

Unit



Parameter	FP035QIA10-00R	FP035QIA14-00R	Unit	Remark
RTC	◎	◎		
Touch Screen Function	-	4W Resistance		
Buzzer Function	◎	◎		
Weight	86	95	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
LACABLE012-FDR	5P 1.25mm - 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	128M		Bytes	Note1
RAM	8M		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		-20	+70	℃	
Operating Temperature With TSP		-20	+60	℃	
Storage Temperature Without TSP		-20	+70	℃	
Storage Temperature With TSP		-20	+70	℃	

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)	-	211	-	mA	±15%
Power Consumption		-	1.1	-	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	3.5” (Diagonal)	inch
Display Format	320 x (R.G.B) x 240	dot
Active Area	70.08(W) x 52.56(H)	mm
Surface Treatment	Haze 20%	

8.2 TFT-LCD Optical Characteristics

Parameter		Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Left	CR≧10	50	60	---	deg	
		Right		50	60	---	deg	
	Vertical	Top		40	50	---	deg	
		Bottom		45	55	---	deg	
Contrast Ratio		CR	At optimized Viewing angle	300	400	---	---	
Brightness Without TSP		L	$\Theta = 0°/\phi = 0$	200	300	---	cd/㎡	
Brightness With TSP		L	$\Theta = 0°/\phi = 0$	160	240	---	cd/㎡	
LED Life Time		---	T_a=+25°c	10000	---	---	Hrs	

9. Pin Description

9.1 J701 Pin Assignment of Signal Input (Pitch 1.25mm 5Pin, Side Entry Type)

FDT Connector Part No.: MS24015R (STM) [Same as 53261-0519 (MOLEX)];

FDT Matching Connector Part No.: P24015 (STM) [Same as 51021-0500 (MOLEX)].

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

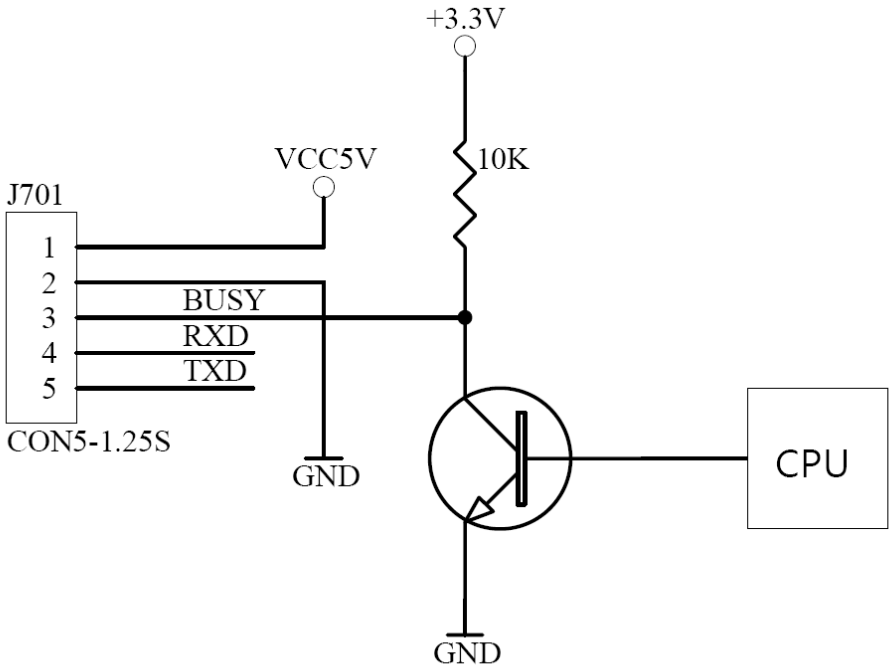
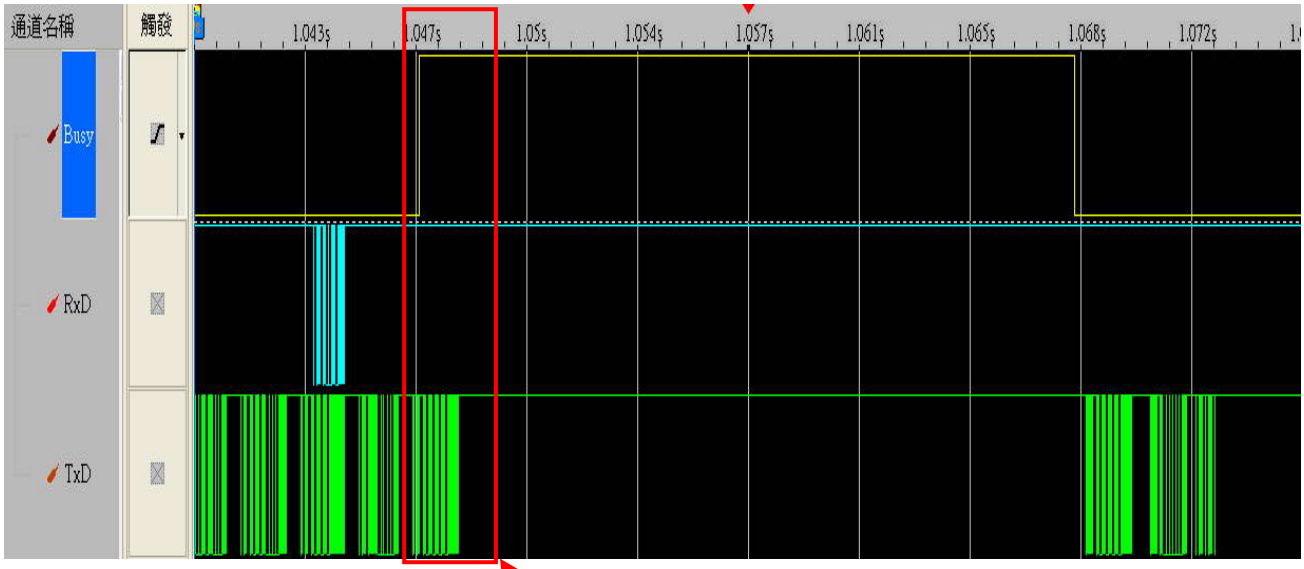


Fig.9-1

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	80% Typ.
Haze	5.0% Typ.

10.2 Mechanical Performance

Parameter	Specifications
Input Method	Finger or stylus pen
Operating Force	Max: 80gf
Surface Hardness	3H

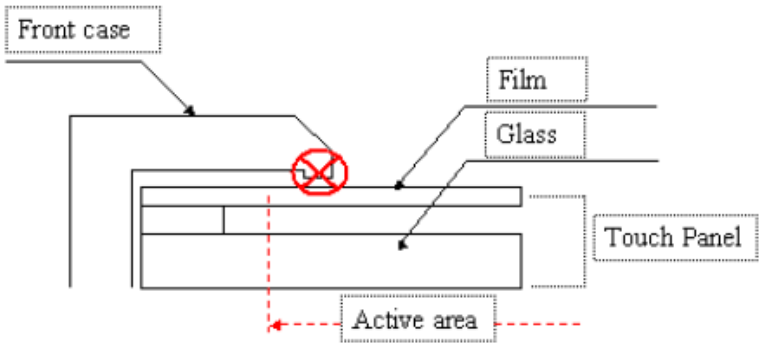
10.3 Durability Performance

Parameter	Specifications
Input Life	10^6 times(Silicon rubber,R8)
Note Life	10^5 characters (Polyacetal ,R0.8)

10.4 Touch Screen Integration Design Guide

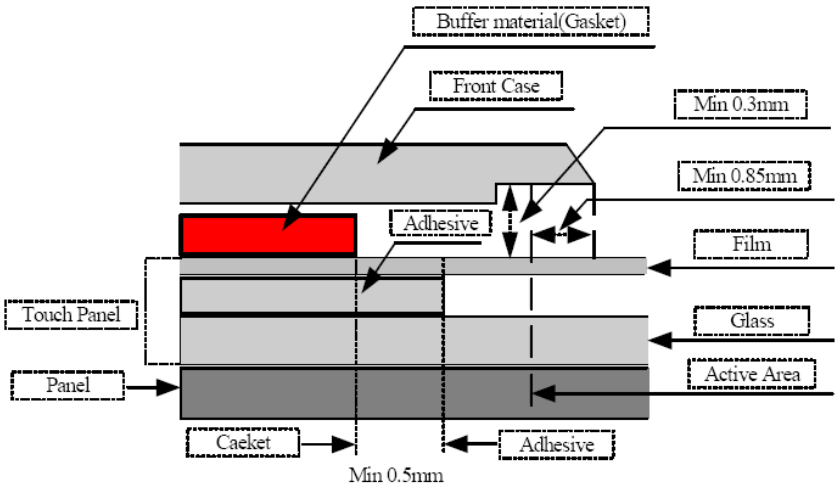
Avoid the design that Front-case overlap and press on the active area of the touch-panel.

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



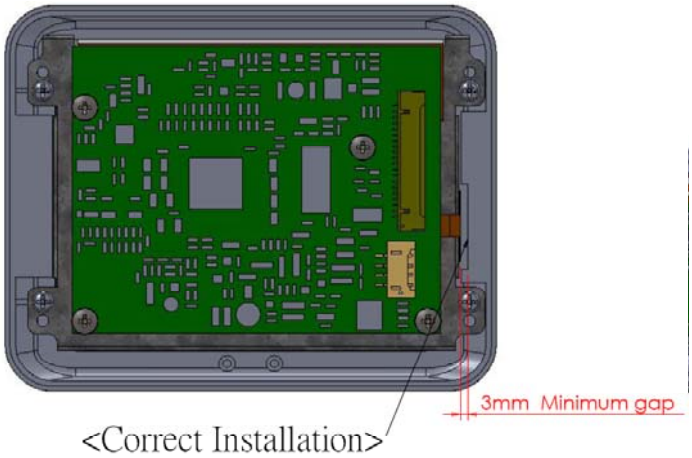
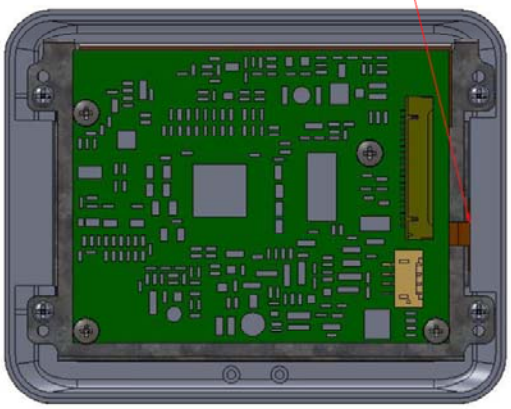
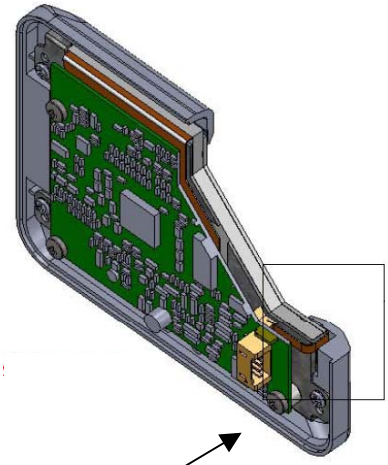
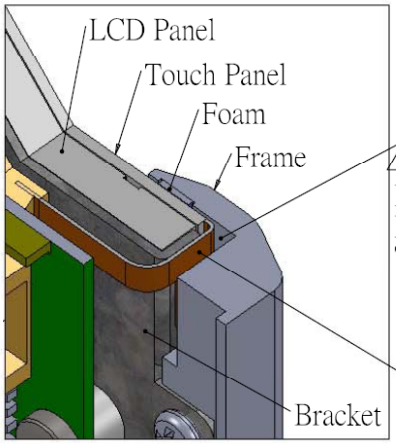
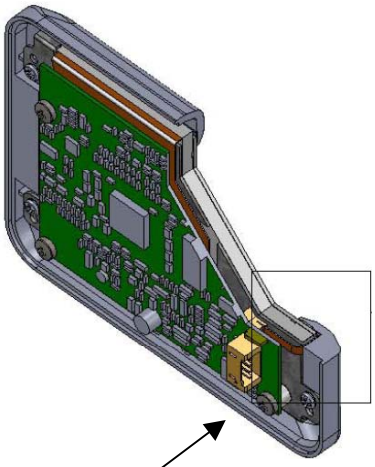
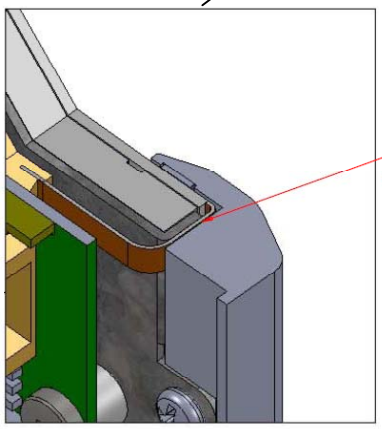
Use a buffer material (Gasket) between the touch-panel and front-case to protect damage andwrong operating.

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



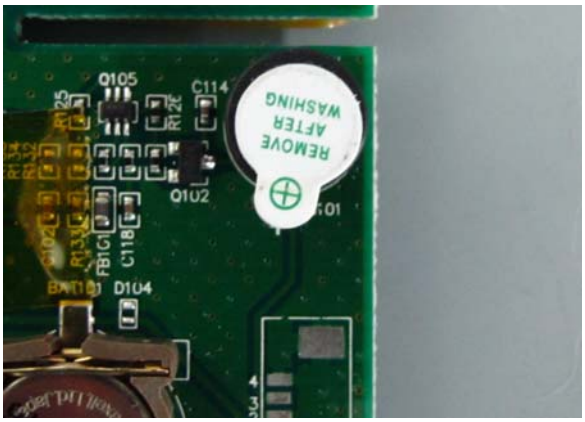
Note: We strongly suggest to follow above design guide to avoid the linear defect happened on the touch panel.

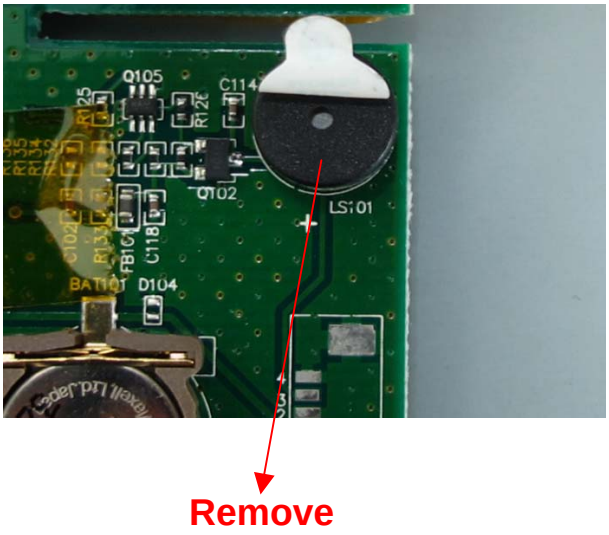
10.5 Mechanical Design Notice For Touch Panel

Correct Installation	Incorrect Installation
 <Correct Installation>	<Incorrect Installation> 
 <Correct Installation>  Zoom-In	 <Incorrect Installation>  Zoom-In

11. Buzzer Notice

11.1 Remove Buzzer Label





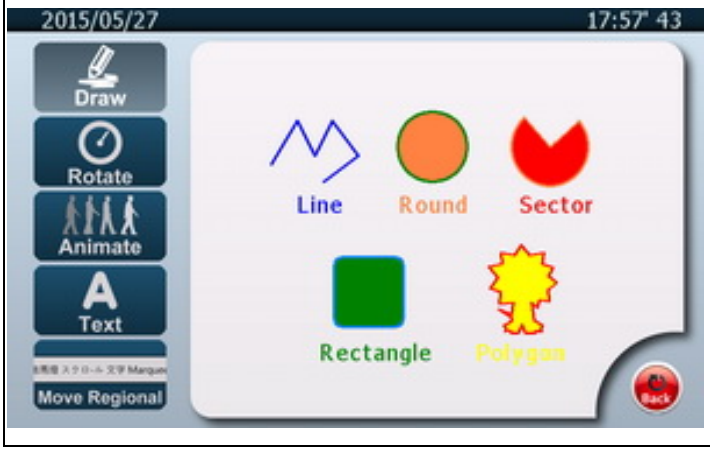
12. Built –in Project Directions

12.1 Operation explaining

The SGM Plus module delivery is included a project.

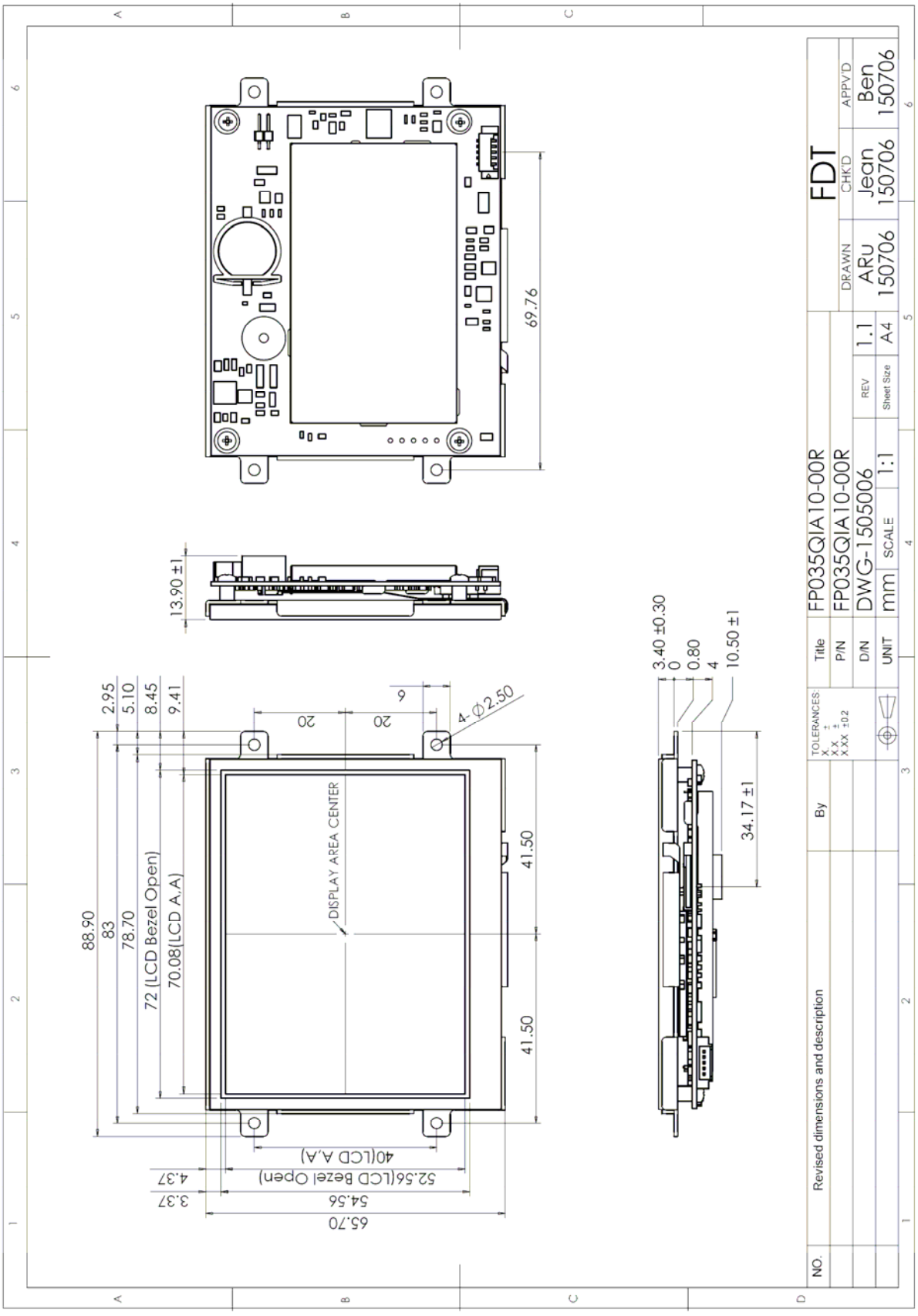
How to use that please refer to the document as “Module_Demo_User_Guide.pdf”

File located : <Disc:\Project of Standard Module\Documents>

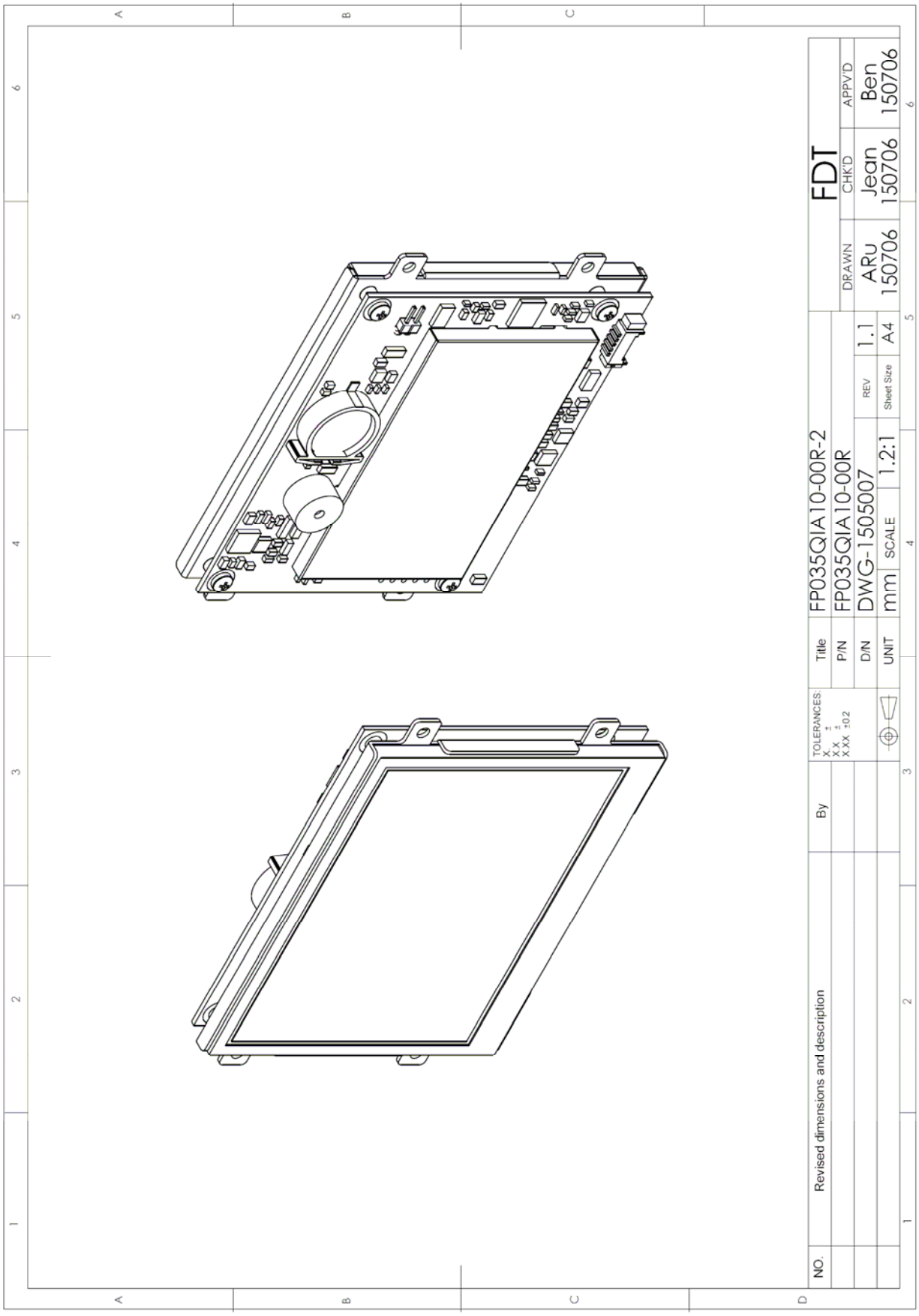
Start Screen	
	
DEMO	**DEMO**
	

13. Dimension Information

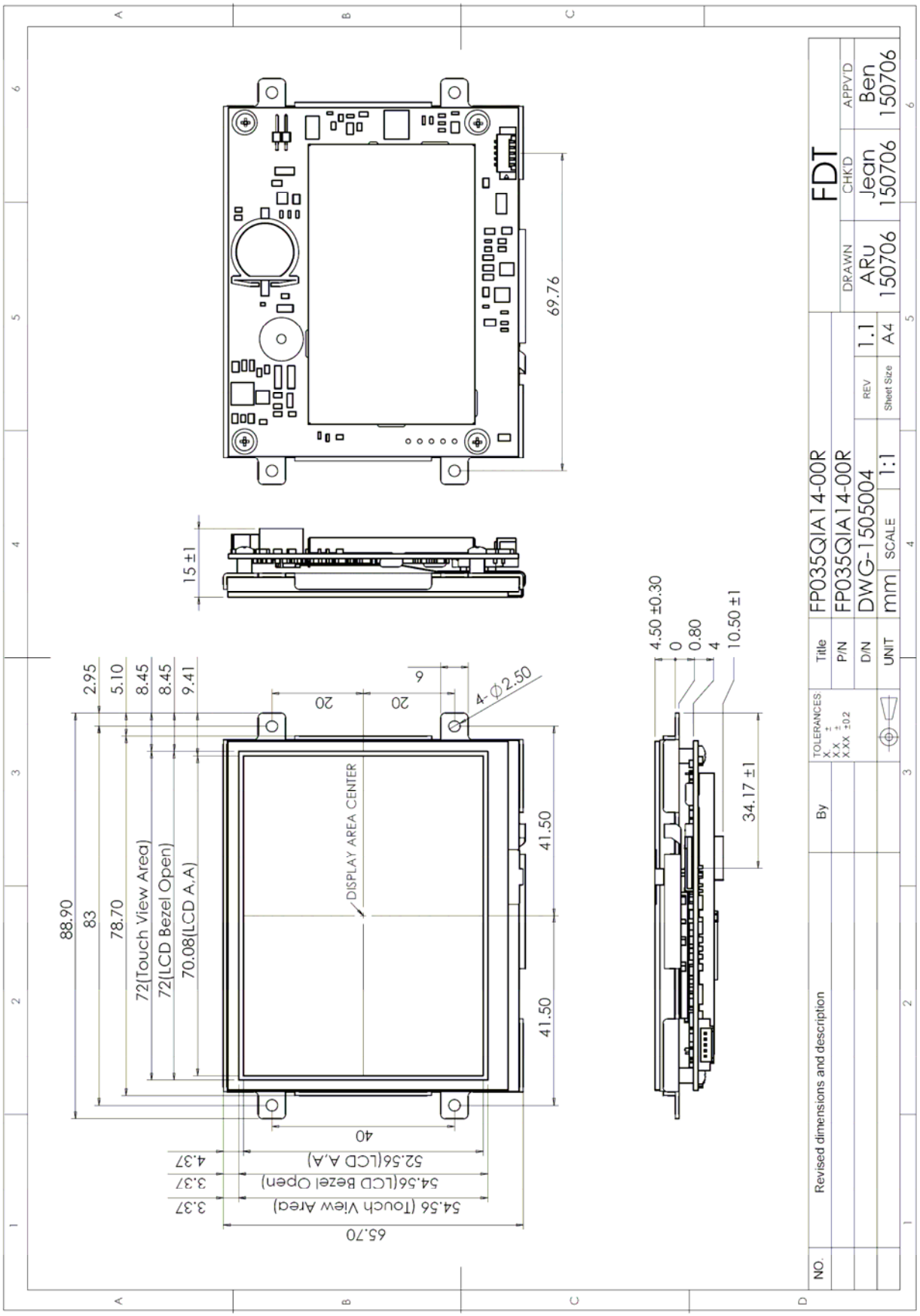
13.1 Unit (FP035QIA10-00R)



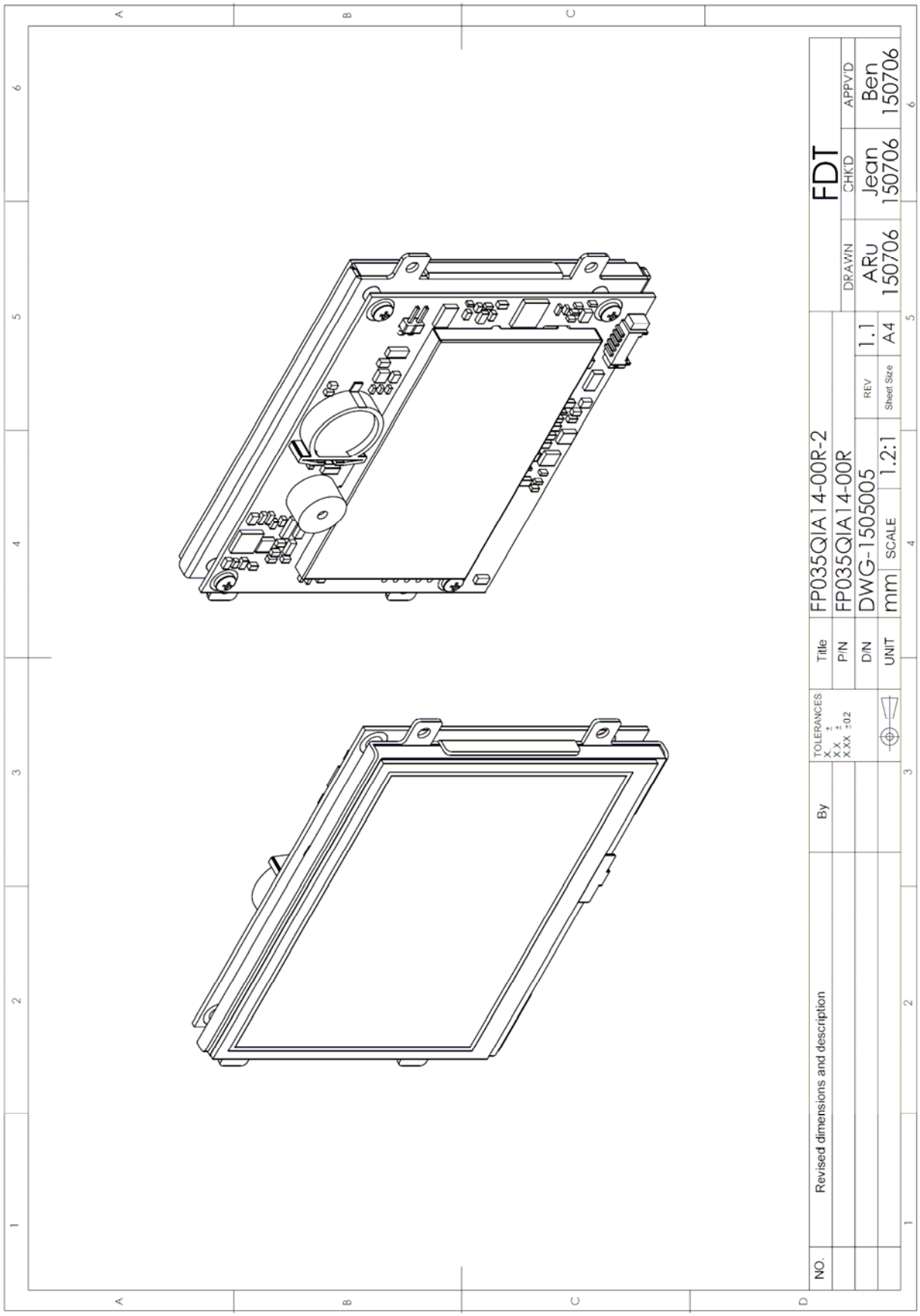
13.2 Unit (FP035QIA10-00R -2)



13.3 Unit (FP035QIA14-00R)

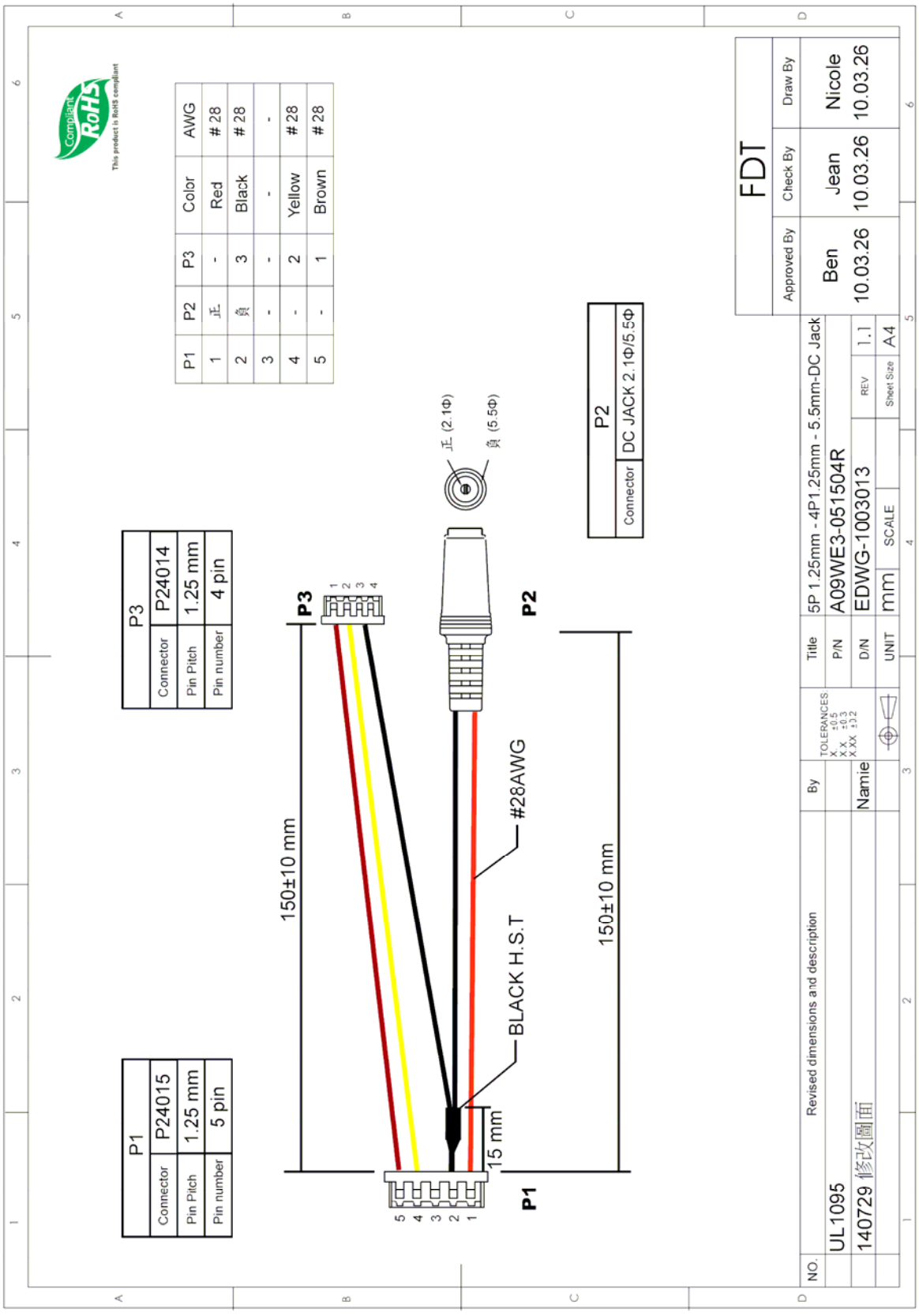


13.4 Unit (FP035QIA14-00R -2)



14. Accessory

14.1 LACABLE012-FDR (Option)



15. Revision History

15.1 Record of Revision

NO.	Date	Description	Page	Note
1.0	July 17, 2015	· First draft	20	