



§ **SPECIFICATION APPROVAL SHEET** §

Fdt Tech Module No **FG035QW00x-00R**

Description: **3.5" Digital TFT-LCD Module**

SPEC No.: **SAS-1003004**

Version: **0.0**

Issue Date: **June 27, 2011**

※ This approval sheet contains 17 pages including the cover and appendix.

Customer:

APPROVED BY:

Date: / / 11

APPROVED BY:

CHECKED BY:

DESIGNED BY:



FLAT DISPLAY TECHNOLOGY

3.5" GRAPHIC TFT-LCD Module

- FG035QW00A-00R
- FG035QW00B-00R

1. General Description

FDT Smart Graphic TFT Module 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 USB port by himself. FDT Smart Graphic TFT Module not only enhances your product values also saves your cost.



1.1 Features

- Aspect Ratio: 4:3
- Single Operation Voltage +12V
- Full Colors Presentation
- UART Interface For Communication
- Easy To Set Up Without SOC Or IPC Controller
- Built In Real Time Clock
- LED Backlight Brightness Control
- Touch Screen Function (Option)
- USB Port For Update Graphic Library

1.2 Application

- Industrial Controller
- Medical Equipment
- Security Equipment
- Simple Function Equipment

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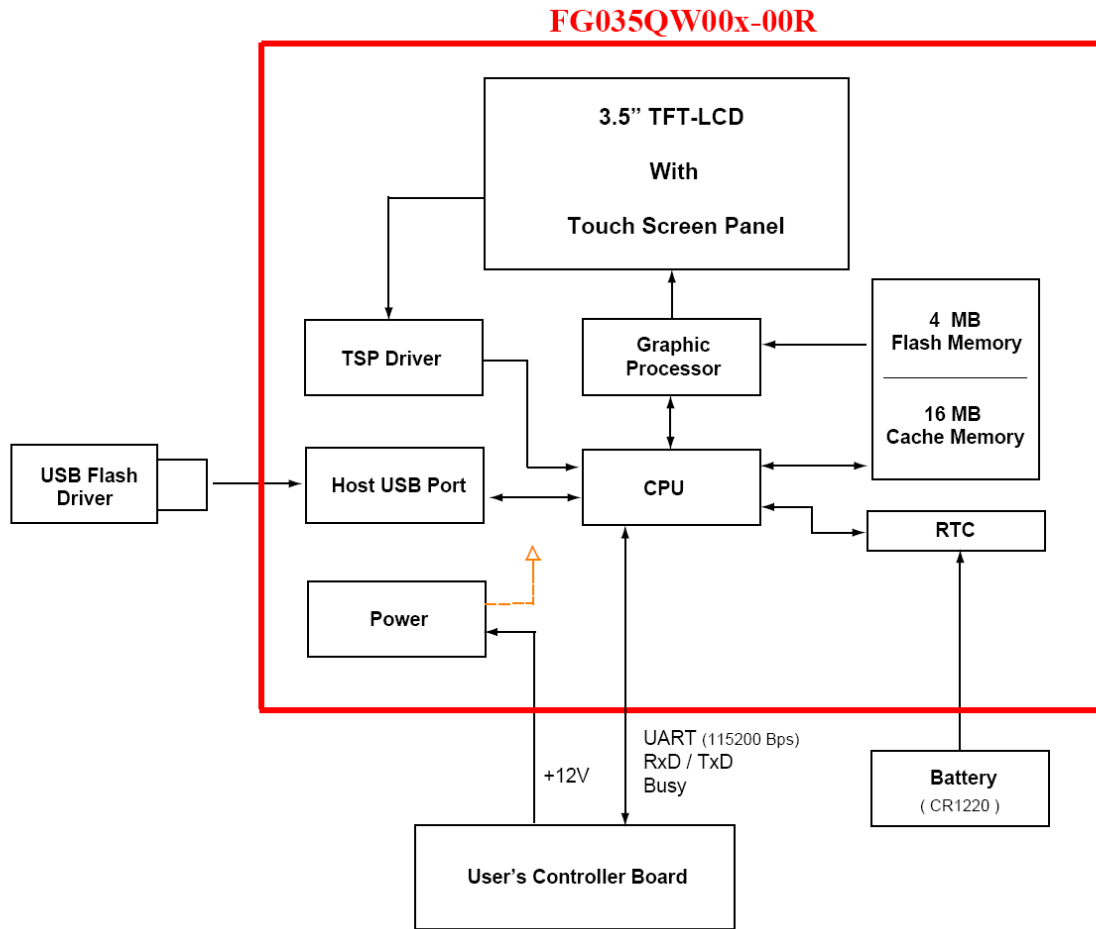


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3. Block Diagram

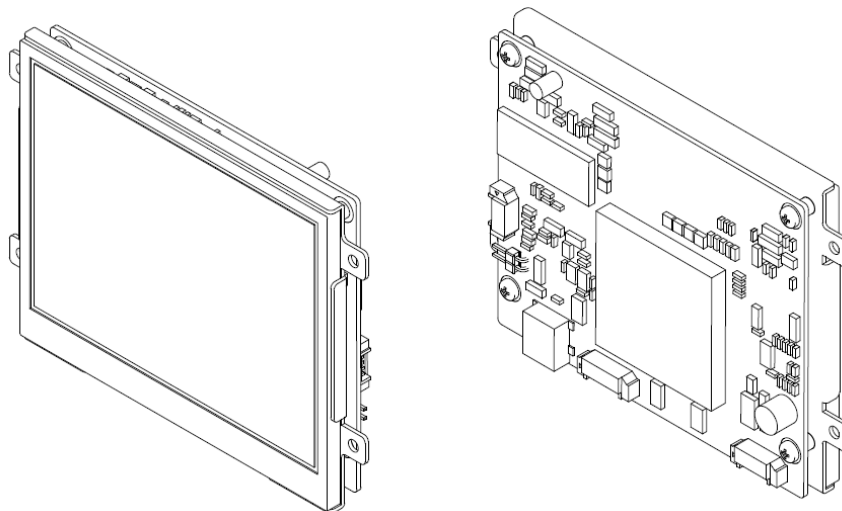
3.1 Block Diagram



4. Order Information

4.1 Unit

Unit

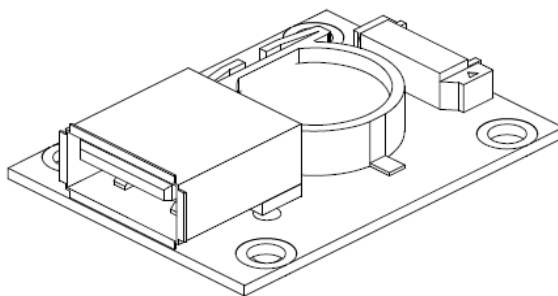


Parameter	FG035QW00A-00R	FG035QW00B-00R	Note
Real Time Clock	⊙	⊙	External Battery
Touch Screen Function	-	4W Resistance	

Note: 1.The tape in back of the bracket is to avoid the panel falling from the unit in delivery.
2.It's Just A temporary adhesion.

4.2 USB& Battery Board (Option)

Unit



Order Part Number	Part Number	Remark
LOUSB00002-FDR	Cable: A09WC2-061506R	

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4.3 TX#CR1220 (3V) (Option)

Unit



Order Part Number	Remark
LABATT0001-FDR	

4.4 Mini USB to USB Type A (Option)

Unit



Order Part Number	Remark
LACONN0005-FDR	

4.5 Power Cable (Option)

Unit



Order Part Number	Remark
LACABLE012-FDR	

5. Specifications

Parameter	Specifications	Unit	Remark
Communication Protocol	Duplex Transmission (UART)		
	UART Transmission Rate	115200	Bps
	Data Bit	8	Bits
	Parity Bit Check	NO	
	Stop Bit	1	Bit
USB (Mini TYPE)	Host	USB 1.1	
Weight	---	g	
Flash ROM	4M	Bytes	Note1
SDRAM	16M	Bytes	
Picture Format	JPEG Category		Note1

Note: 1.How many pictures in flash memory depend on picture's compression ratio.

6. Absolute Maximum Ratings

6.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	V _{in}	+9	+15	V	
Digital Input Signal	TTL	+0.3	+3.6	V	
Operating Temperature Without TSP		-20	+70	°C	
Operating Temperature With TSP		-20	+60	°C	
Storage Temperature Without TSP		-20	+70	°C	
Storage Temperature With TSP		-20	+70	°C	

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7. Recommended Operating Conditions

7.1 Electrical Characteristics

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input Voltage	V _{in}	+10	+12	+14	V	
Total Current	I _{in}	-	165	-	mA	@12V
Power Consumption		-	1.98	-	W	@12V
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 (H) x 52.56 (V)	mm
Surface Treatment	Haze 20%	

8.2 TFT-LCD Optical Characteristics

Parameter	Symbol	Condition	Min	Typ	Max	Unit	Remark
Viewing Angle	Horizontal	Left	50	60	---	deg	
		Right	50	60	---		
	Vertical	Top	CR ≥ 10	40	50	---	deg
		Bottom		45	55	---	deg
Contrast Ratio	CR	At Optimized Viewing Angle	300	400	---	---	
Brightness Without TSP	L	$\theta = 0^\circ / \phi = 0$	180	250	---	cd/m ²	
Brightness With TSP	L	$\theta = 0^\circ / \phi = 0$	180	200	---	cd/m ²	
LED Life Time Without TSP	---	T _a =25°C	---	10000	---	Hour	
LED Life Time With TSP	---	T _a =25°C	---	10000	---	Hour	

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9. Pin Description

9.1 J101 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	VCC12V	-	+12V Input Voltage	DC
2	GND	-	Ground	
3	BUSY	O	Busy status (Internal pull high)	High: Busy Low: Normal (Note1)
4	RXD	I	Receive Data (UART)	TTL Level RS-232 (3.3V)
5	TXD	O	Transmit Data (UART)	TTL Level RS-232 (3.3V)

Note1: Your application circuit board must be connects with busy pin of SGM.

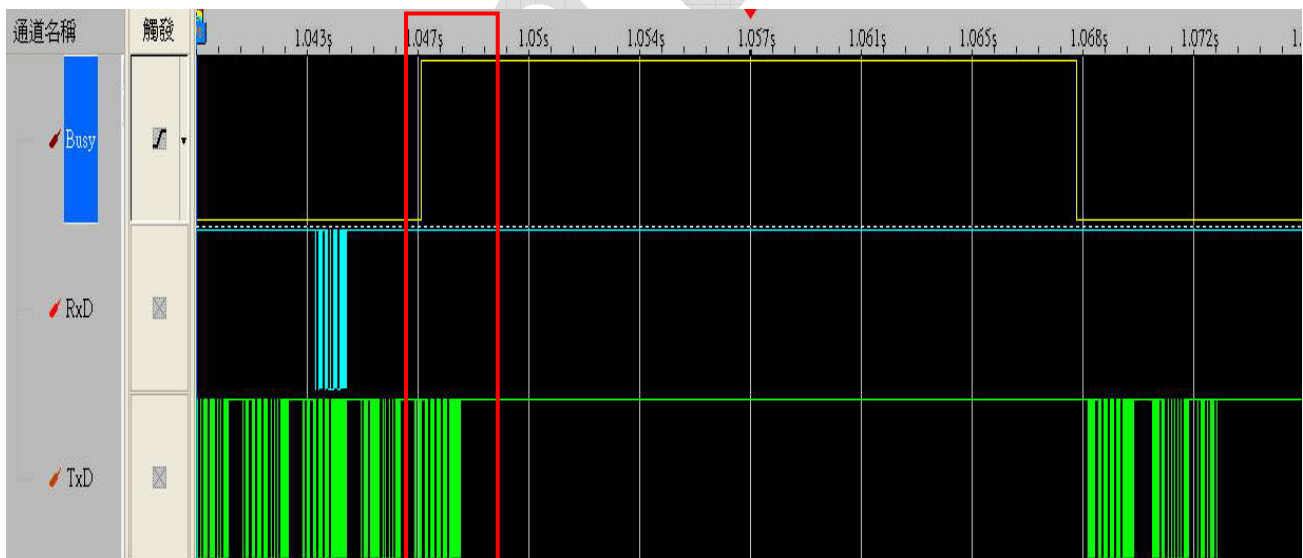
9.2 USB201 : Pin Assignment of Signal Input (Pitch 1.25mm 6Pin, Side Entry Type)

※ FDT Connector Part No.: MS24016R (STM) [Same as 53261-0619 (MOLEX)] ;

FDT Matching Connector Part No.: P24016 (STM) [Same as 51021-0600 (MOLEX)].

Pin No	Symbol	I/O	Description	Remark
1	VBUS	-	USB VCC	
2	D-	-	DATA (-)	
3	D+	-	DATA (+)	
4	GND	-	Ground	
5	VBAT	-	Power input	@3V
6	GND	-	Ground	

9.3 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.

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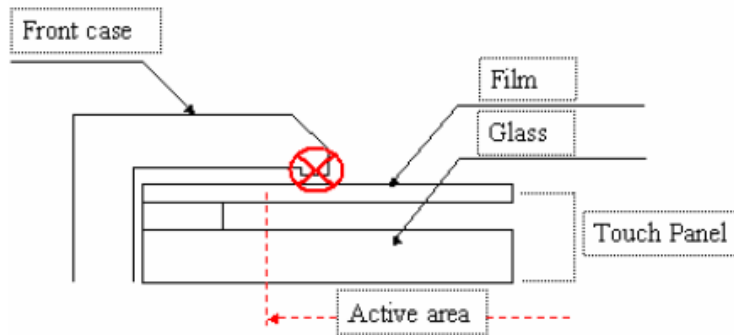


10. 4W Resistance Touch Panel Characteristics

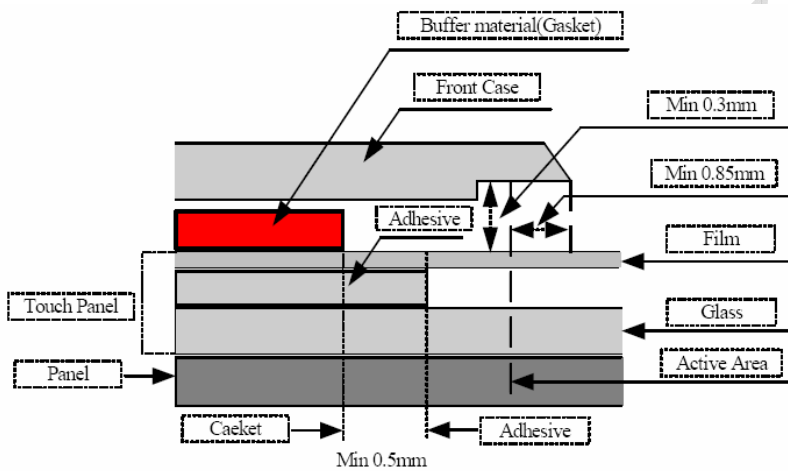
10.1 Touch Screen Integration Design Guide

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.

10.2 Mechanical Performance

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

10.3 Durability Performance

Parameter	Specifications
Pen Sliding Durability	≥ 100000 characters (Polyacetal, R0.8)
Sliding Durability	≥ 1000000 times, (Silicon rubber, R8)

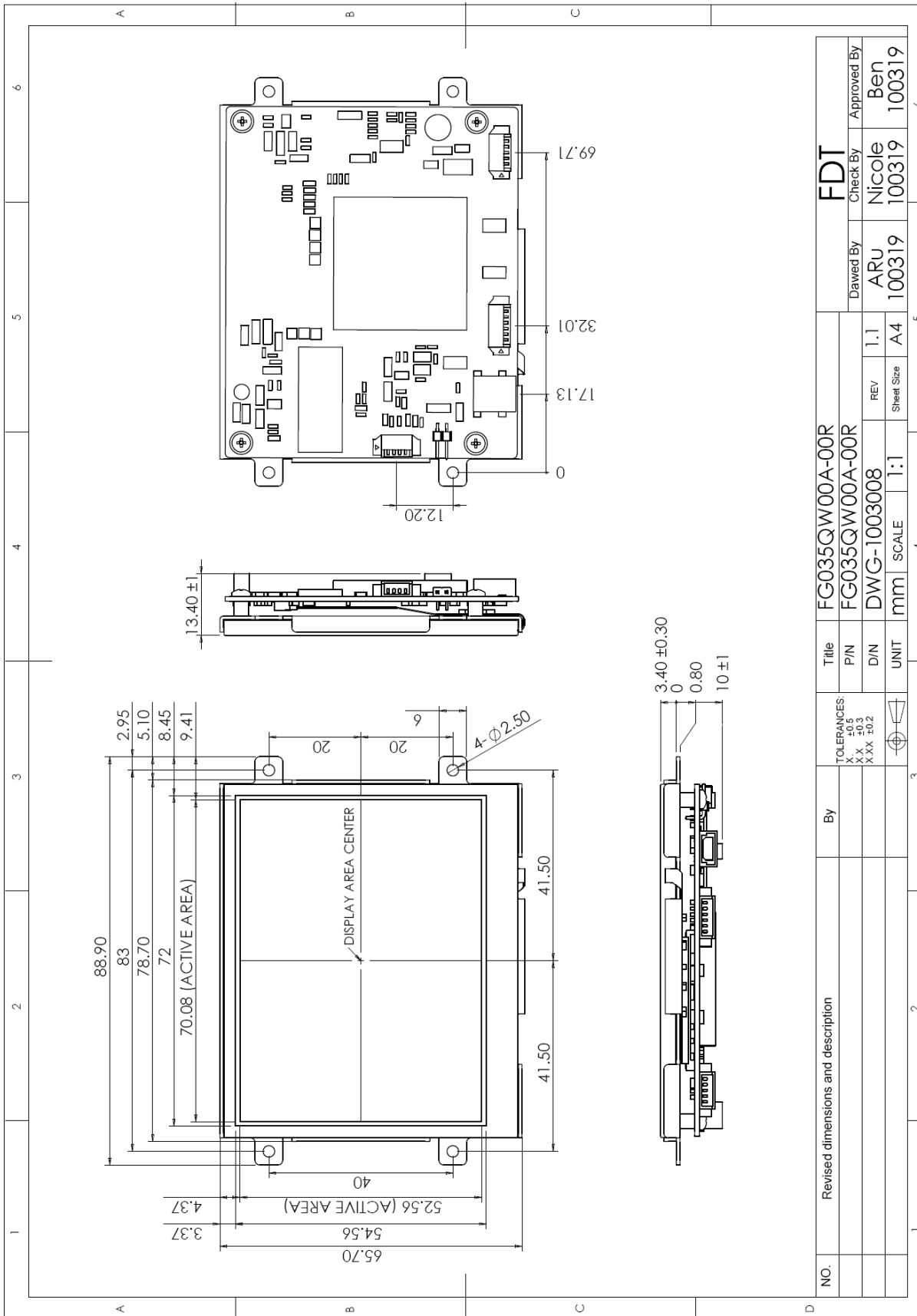
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11. Dimension Information

11.1 Unit (FG035QW00A-00R)

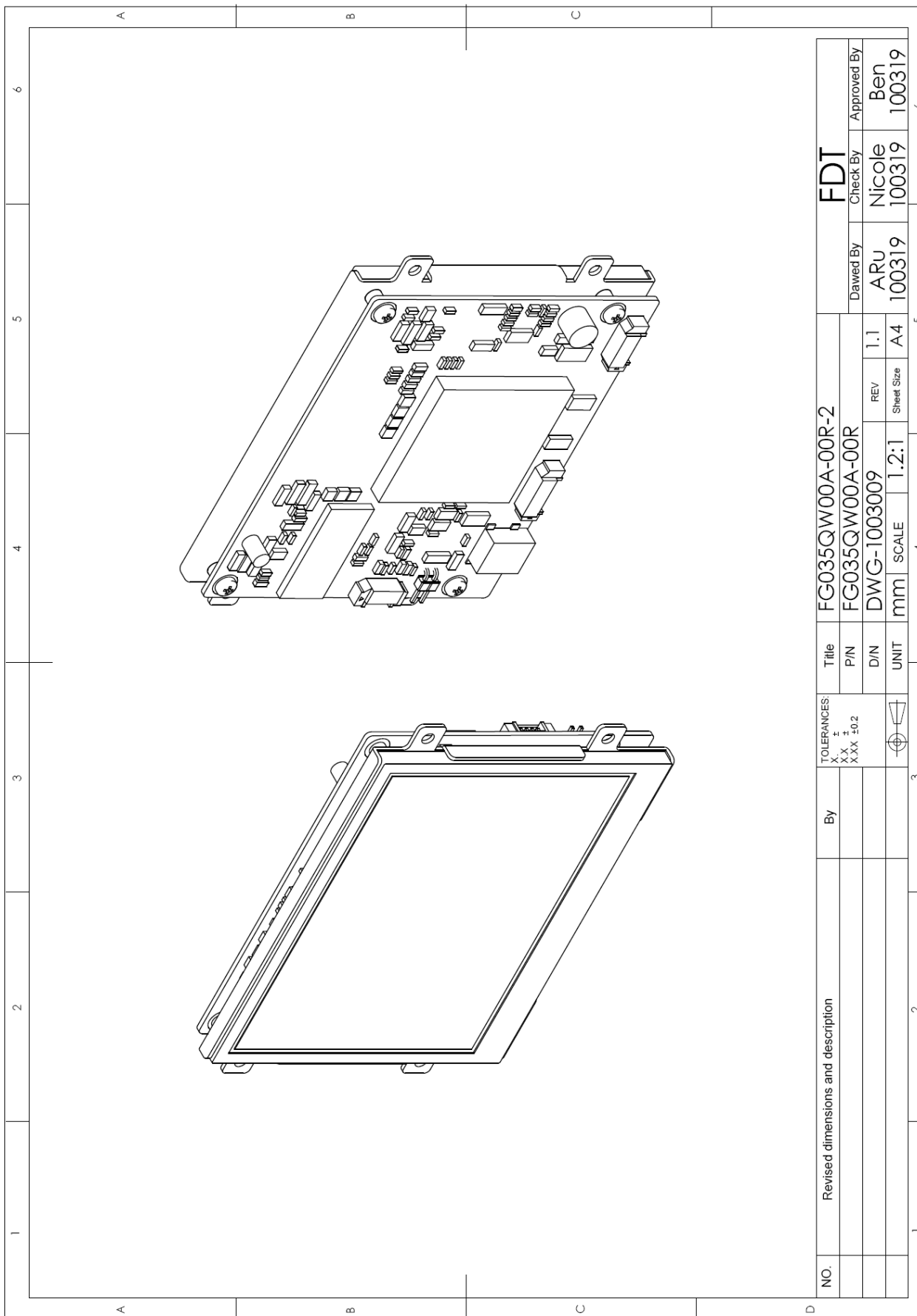


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11.2 Unit (FG035QW00A-00R-2)

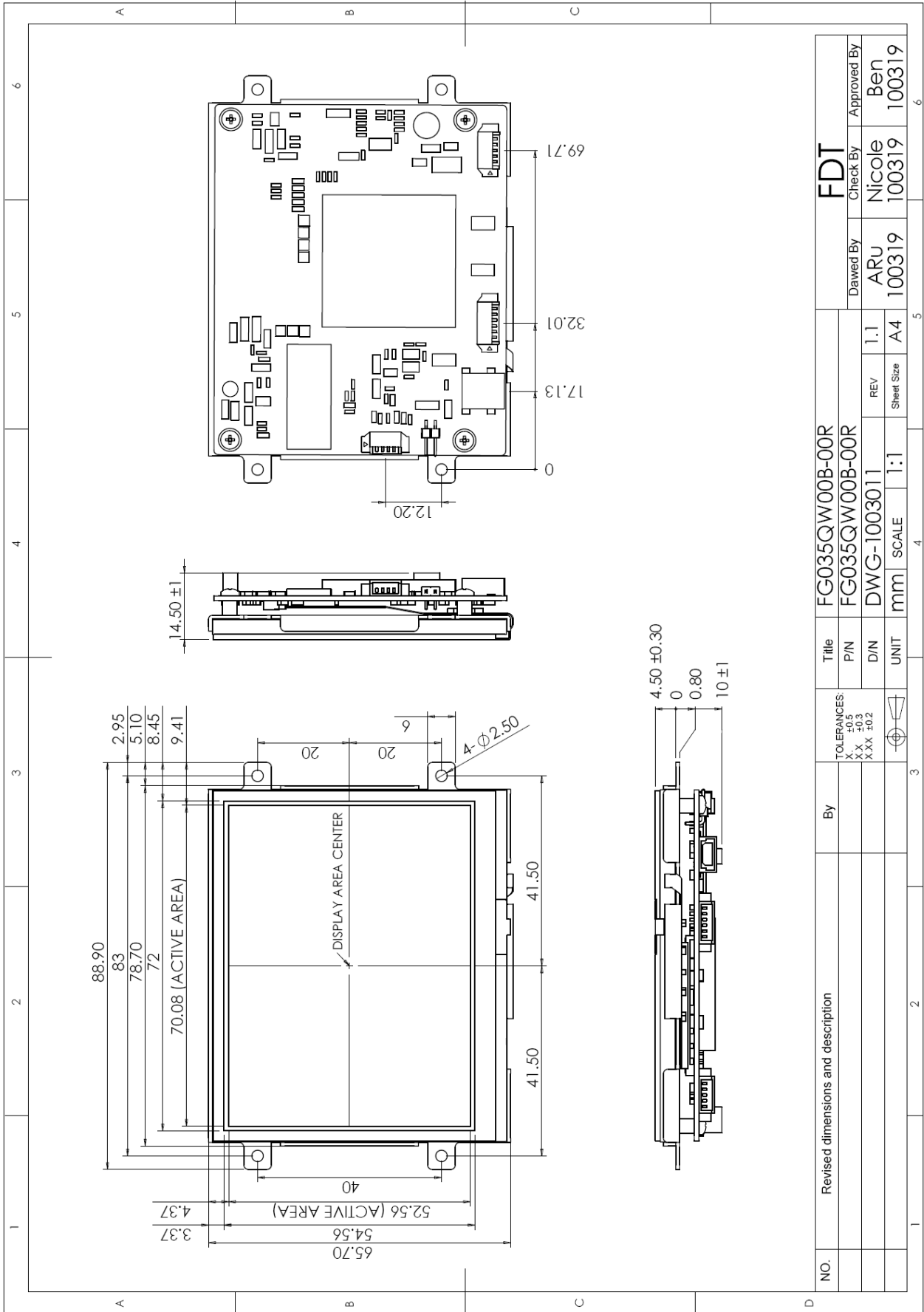


NO.	Revised dimensions and description	By	TOLERANCES: X ± XX ±0.2 XXX ±0.2	Title		FDT		
				FG035QW00A-00R-2	FG035QW00A-00R	Drawn By	Check By	Approved By
				DWG-1003009	1.1	ARU	Nicole	Ben
				mm	SCALE	1.2:1	100319	100319
				UNIT	REV	Sheet Size		
						A4		

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11.3 Unit (FG035QW00B-00R)

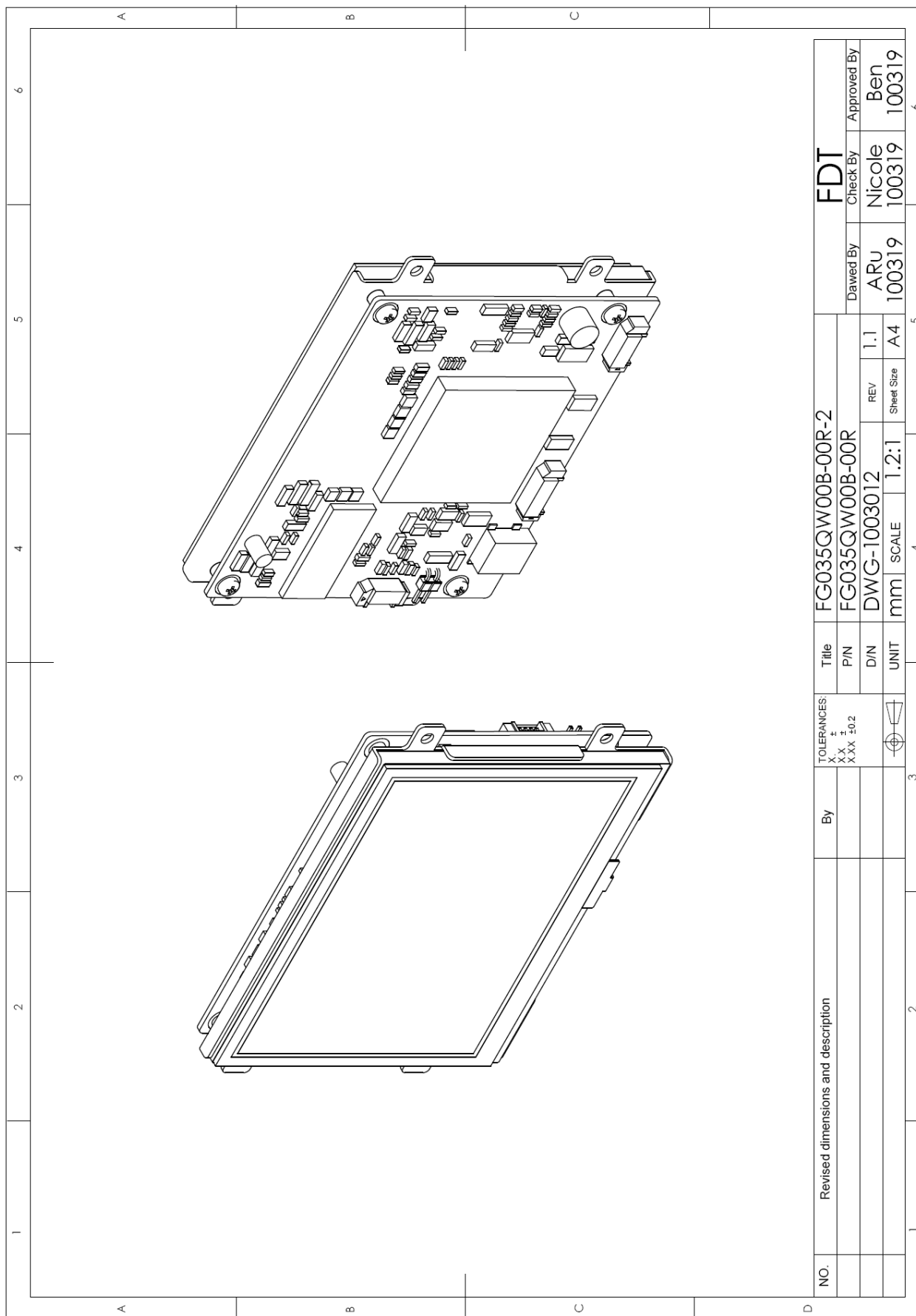


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11.4 Unit (FG035QW00B-00R-2)



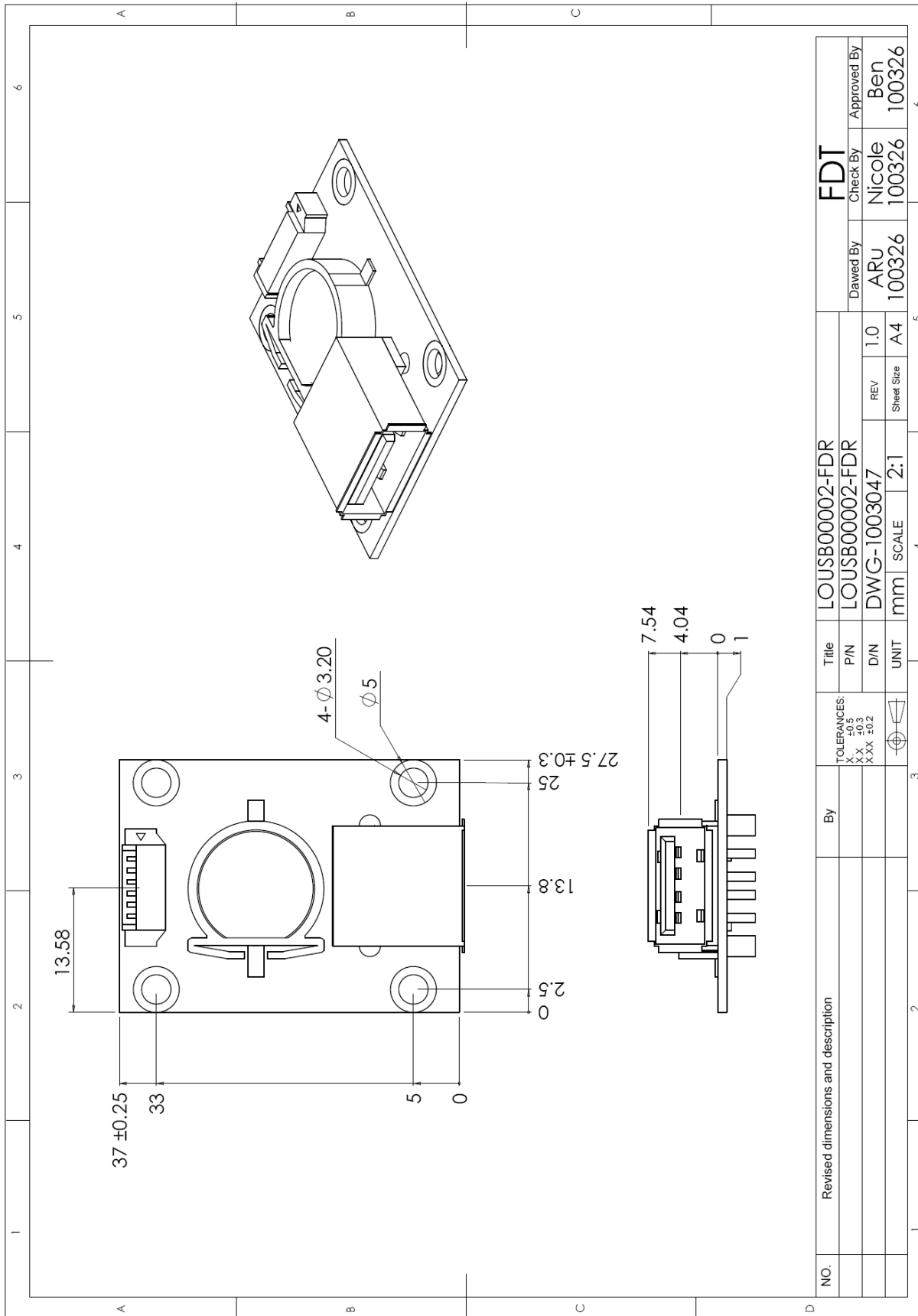
NO.	Revised dimensions and description	By	TOLERANCES: X.X ± X.X ± X.XX ±0.2	Title	FG035QW00B-00R-2			FDT		
				P/N	FG035QW00B-00R			Drawing By	Check By	Approved By
				D/N	DWG-1003012			ARU	Nicole	Ben
				UNIT	mm	SCALE	1.2:1	REV	1.1	100319
							Sheet Size	A4		

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12. Accessory

12.1 LOUSB00002-FDR (Option)

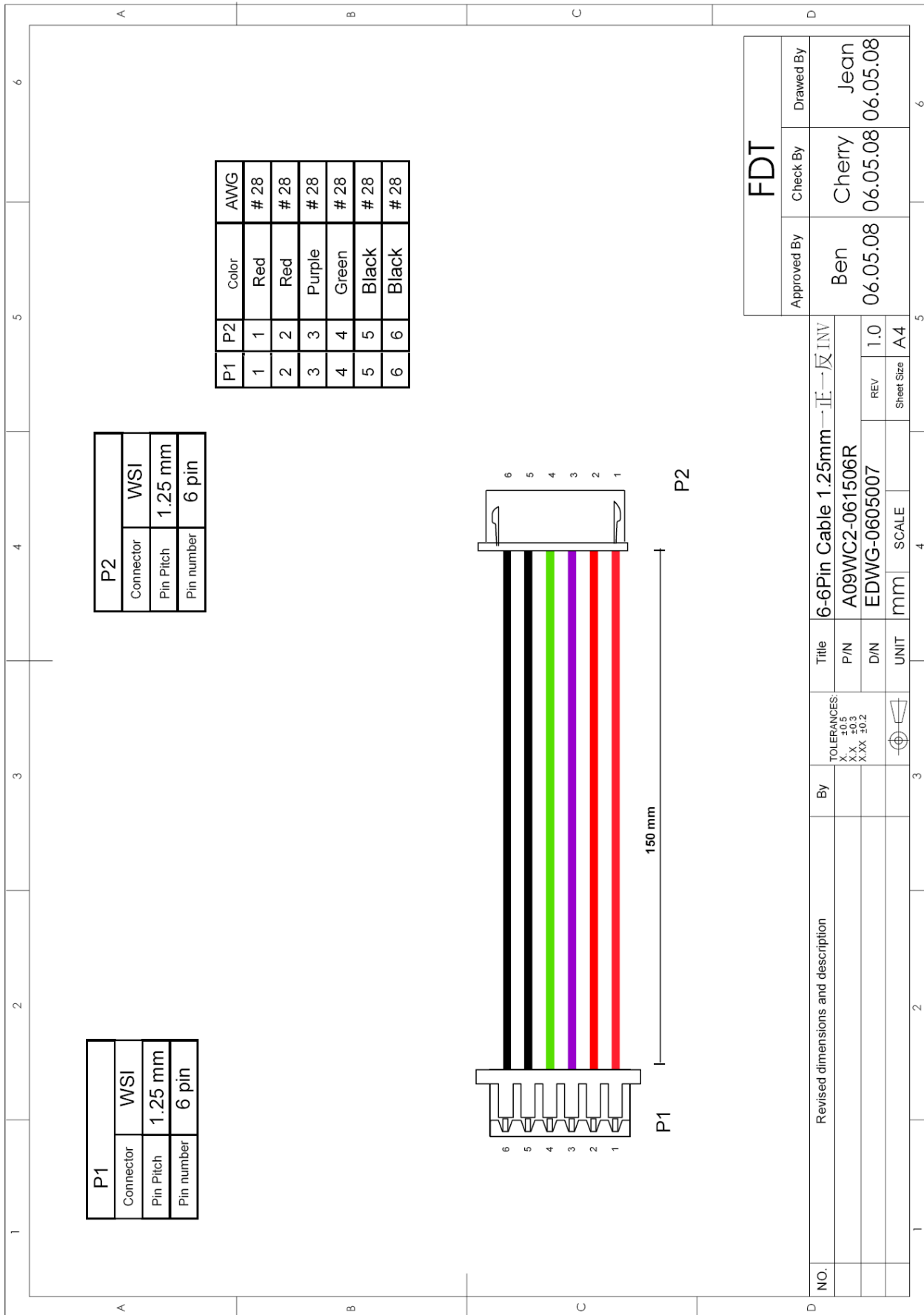


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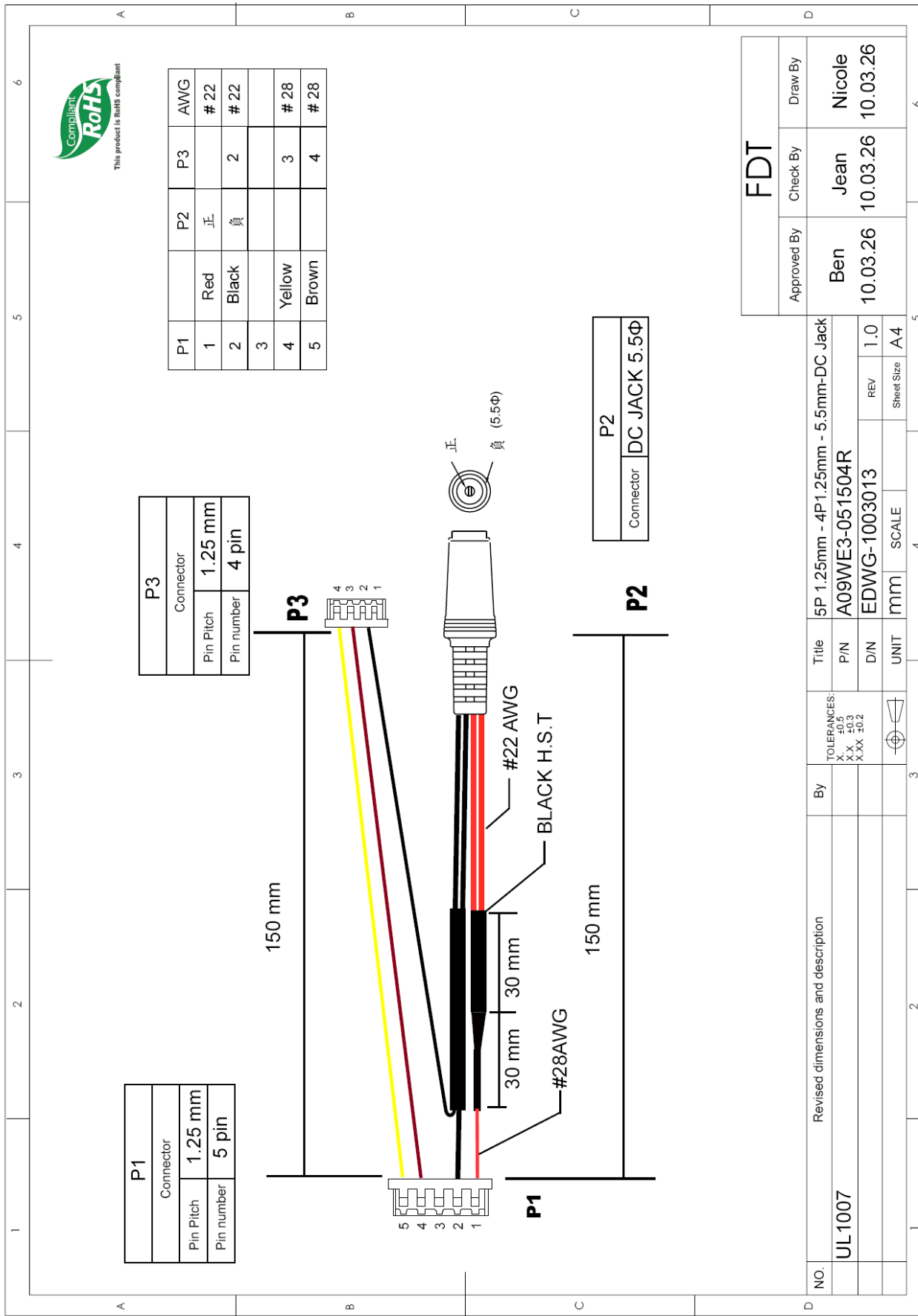
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12.2 A09WC2-061506R (Option)



12.3 LACABLE012-FDR (Option)



13. Revision History

13.1 Record of Revision

NO.	Date	Description	Page	Note
0.0	March.26.2010	· First draft (Tentative)	18	
0.0	April.1.2010	· Add 9.1 (Remark)	8	
0.0	April.12.2010	· Update 8.2 TFT-LCD Optical Characteristics (Life Time)	7	
		· Update 9.1 J101Pin Assignment of Signal Input	8	
0.0	May.26.2010	· Add 9.2 USB201Pin Assignment of Signal Input	8	
		· Add 9.3 UART Timing Chart(Client side)	8	
		· Revise 12.2 A09WC2-061506R (Option)	15	
0.0	June.20.2011	· Add 9.1 PIN 3. Busy (Note1)	8	
		· Add 9.1 PIN 5,6. RXD,TXD (UART)	8	
		· Add 9.1 Connector type	8	
0.0	June.27.2011	· Add Aspect Ratio: 4:3	1	
		· Update LED Life Time Without TSP	7	
		· Update Operating Force	9	
		· Update Pen Sliding Durability	9	
		· Update Sliding Durability	9	