



## § SPECIFICATION APPROVAL SHEET §

**Fdt Tech Module No. :** UC070WI~~X~~0C-00R

**Description :** 7" Digital TFT-LCD Module

**SPEC No. :** SAS-1702007

**Version :** 1.0

**Issue Date :** November 5, 2019

※ This approval sheet contains 20 pages including the cover and appendix.

<b>Customer :</b>  <b>Date :</b> /     / 19	<b>Approved By :</b>
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**Approved By :** \_\_\_\_\_      **Checked By :** \_\_\_\_\_      **Designed By :** \_\_\_\_\_





## 1. General Description

FDT Micro Controller-HMI is a unique TFT LCD module which builds graphics and characters 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 Micro Controller-HMI not only enhances your product values also saves your cost.

### 1.1 Features

- Variable-Oriented
- 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
- Projected Capacitive Touch
- Serial Communication: UART (RS232 Option)
- Low Power Consumption / High Reliability

### 1.2 Application

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



## 2. Contents

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## 3. Specifications

LCD	
Panel Size	7"
Resolution (Pixels)	800x480
Luminance Without PCAP	400cd/m <sup>2</sup>
Luminance (PCAP)	340 cd/m <sup>2</sup>
Contrast Ratio	500
View Angle	70 / 70 / 70 / 50
LED Life Time	20K (Min.)
Touch Screen	
Resistive Type	Projected Capacitive Touch
Storage	
Micro SD Slot	Recommend SDHC
Flash Memory	256M Bytes (Note1)
RAM	16M Bytes (Note2)
Picture Format	
Type	BMP category

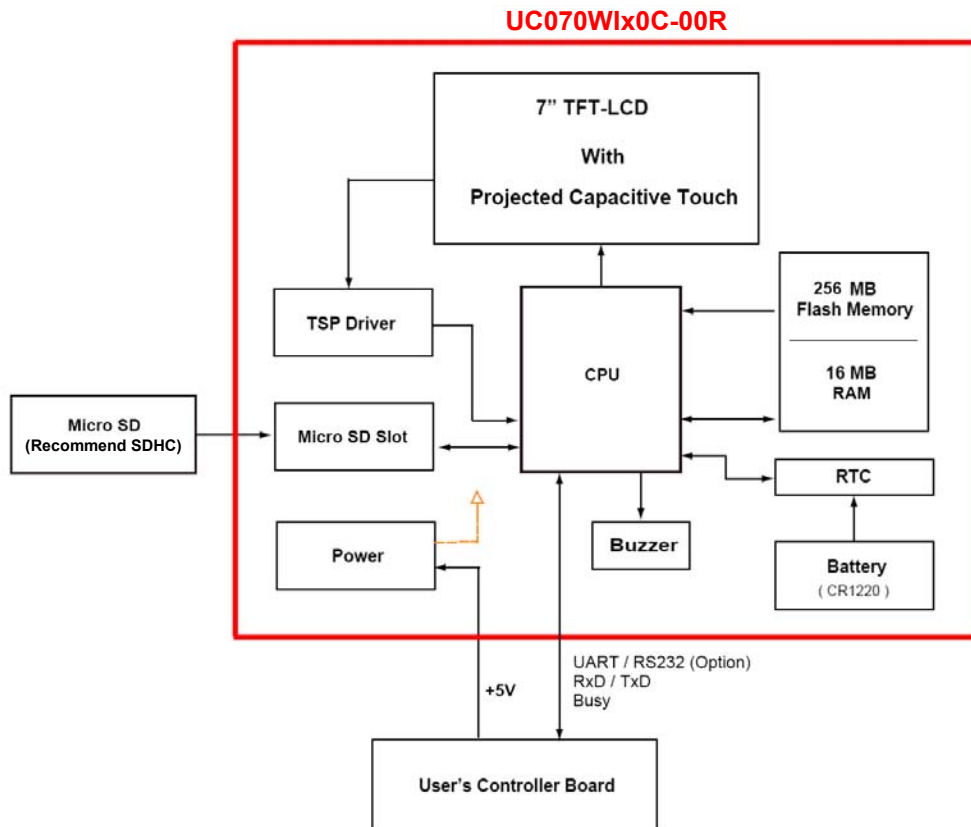
Power Requirement		
Power Input	+5V VDC	
Power Consumption@+5V	3.15 Watts (±15%)	
Controls		
Transmission Interface	UART / RS232 (Duplex Transmission)	
Communication Protocol		
UART Transmission Rate	115200 (max.921600bps) Bps	
Data Bit	8 Bits	
Parity Bit Check	None	
Stop Bit	1 Bit	
Environment		
	With PCAP	
Temperature Range	Operating	-15~+70°C
	Storage	-20~+70°C
High Temperature & High Humidity (Non-condensing)	Operating	+60°C / 90%

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

Note 2: GUI cache memory

## 4. Block Diagram

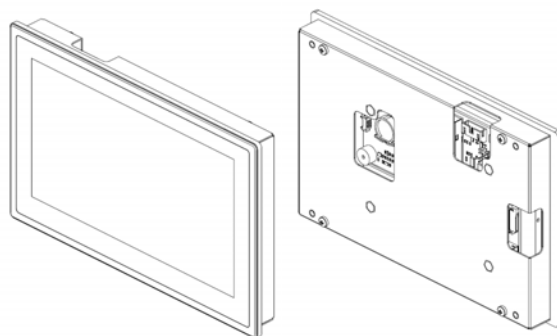
### 4.1 Block Diagram



## 5. Order Information

### 5.1 Unit






#### Unit



Parameter	UC070WIA0C-00R	UC070WIB0C-00R	Unit	Remark
RTC	⊙	⊙		
Touch Screen Function	Projected Capacitive Touch	Projected Capacitive Touch		
Outline Dimension	188.4x121x22.15	188.4x121x22.15	mm	
Buzzer Function	⊙	⊙		
Transmission Interface	UART	RS232		
Weight	543	543	g	±10%
Condition	Standard	Non-Standard		

**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.

### 5.2 Accessories (Option)

NO.	Item	Order P/N	Picture	Remark
1.	7P 2.0mm - 4P1.25mm - 5.5mm DC Jack 2.1 φ	LACABLE008-FDR		Only for UC070WIA0C-00R
2.	GCK-003 Signal Cable 7Pin 2.0mm to 7Pin 1.25mm (L:150mm)	LACABLE009-FDR		
3.	Rs232 Board	LOPOWER014-FDR		Only for UC070WIB0C-00R
4.	Female/Female Null Modem type L:1800mm	LACABLE045-FDR		
5.	Fixed PlateX4 M3*0.5*4 Screw X8	LABK000001-FDR		Refer To Installation Recommendations

## 6. Absolute Maximum Ratings

### 6.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	Vin	+4.2	+5.7	V	
UART Mode	TXD / RXD / BUSY	+0.3	+3.6	V	
	RXD	+0.3	+5.5	V	
RS232 Mode	TXD / BUSY	-6	+6	V	
	RXD	-15	+15	V	
Operating Temperature With PCAP	-	-15	+70	°C	
Storage Temperature With PCAP	-	-20	+70	°C	
Operate With PCAP at High Temperature and Humidity (Non-condensing)	-	-	+60	°C	@90%RH

## 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)	-	630	-	mA	±15%
Power Consumption		-	3.15	-	W	@5V
UART Mode	TXD / BUSY	+0.3	+3.3	-	V	
	RXD	+0.3	+3.3	+5.3	V	
RS232 Mode	TXD / BUSY	-5	-	+5	V	
	RXD	-12	-	+12	V	

## 8. Pin Description

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

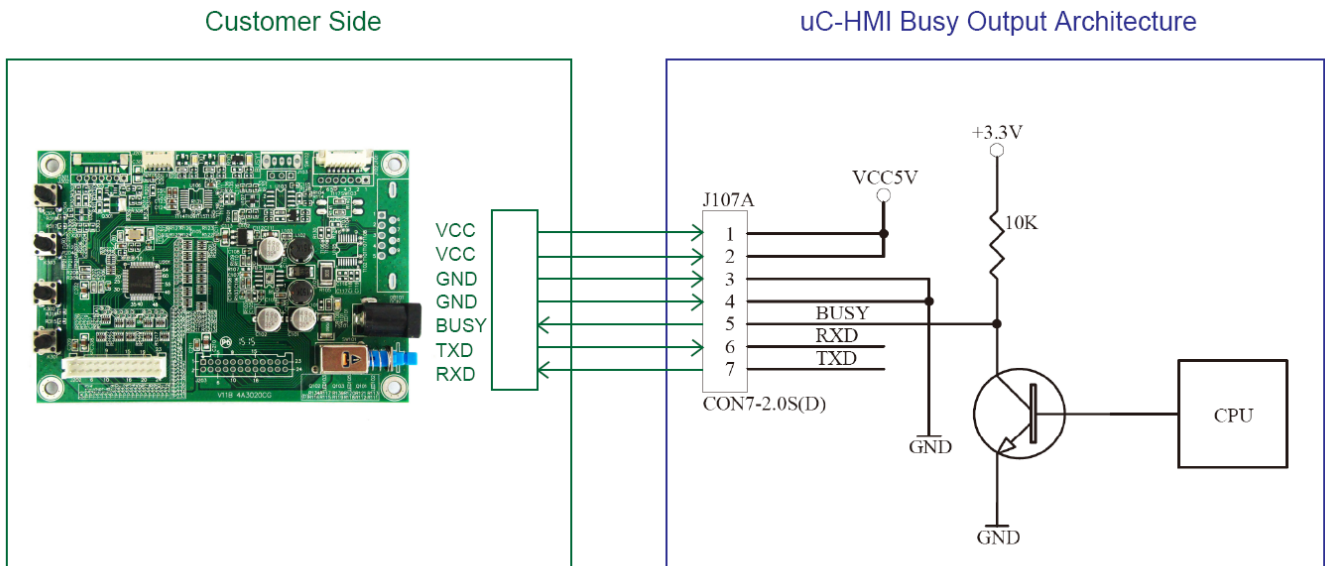
- ※ FDT Connector Part No.: S7B-PH-K-S (JST) or [Same as M24267R (STM)];  
FDT Matching Connector Part No.: PHR-7 (JST) or [Same as P24267 (STM)]

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	(Note1,2)
6	RXD	I	Receive Data	
7	TXD	O	Transmit Data	

**Note: 1.** Your application circuit board must be connects with BUSY pin of uC-HMI.

	BUSY Active	BUSY Inactive
UART Mode	+3.3V	0V
RS232 Mode	-5V	+5V

### 2. BUSY circuit of UART Mode

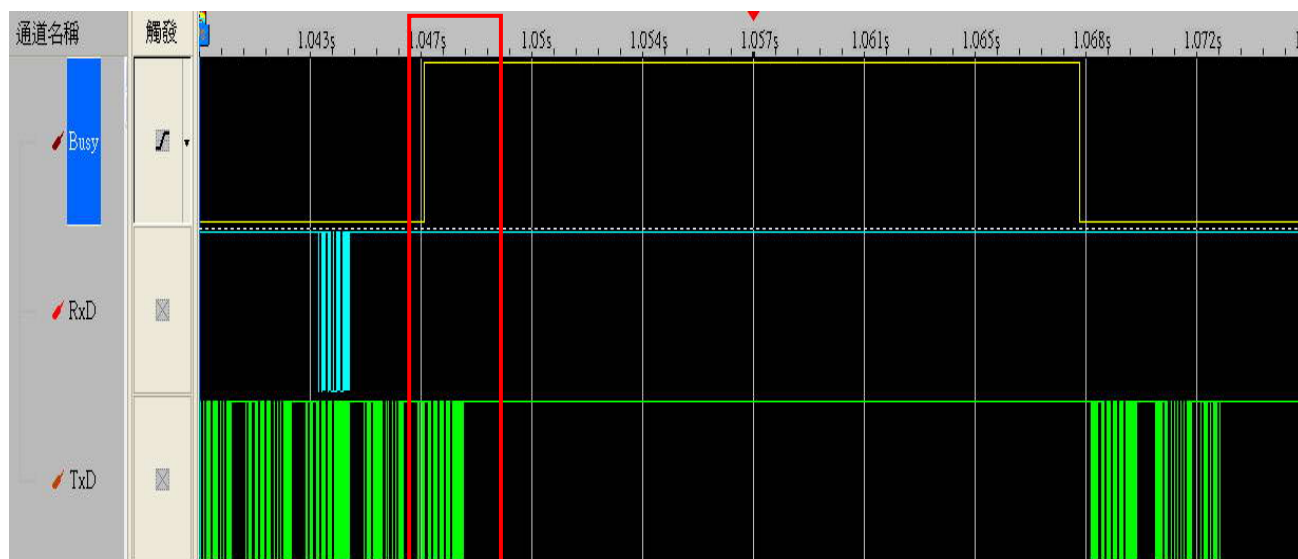


**3. If the command is continuously sent while busy High, this command will be discarded and cannot be executed.**



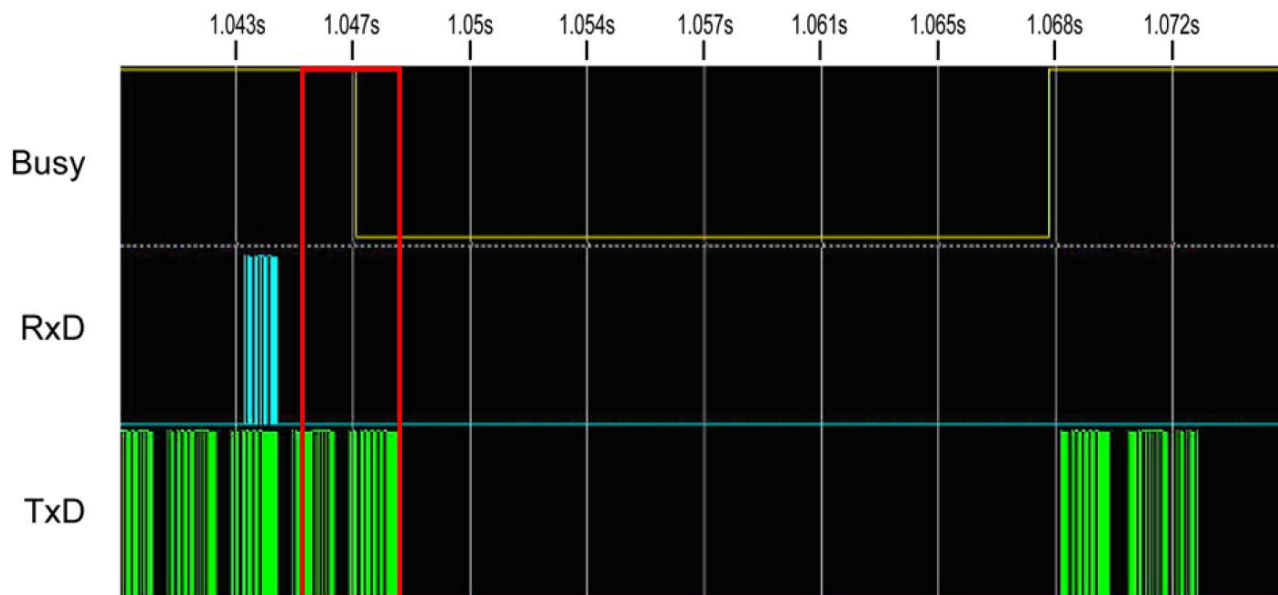


8.2 UART Timing Chart (Client Side)



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

8.3 RS232 Timing Chart (Client Side)



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



## 9. Projected Capacitive Touch Panel Characteristics

### 9.1 Electrical Performance

Parameter	Symbol	Min	Typ	Max	Unit	Note
Input Voltage		-	3.3V	-		
Response Time		-	-	16	ms	

### 9.2 Optical Performance

Parameter	Specifications
Light Transmittance	$\geq 85\%$

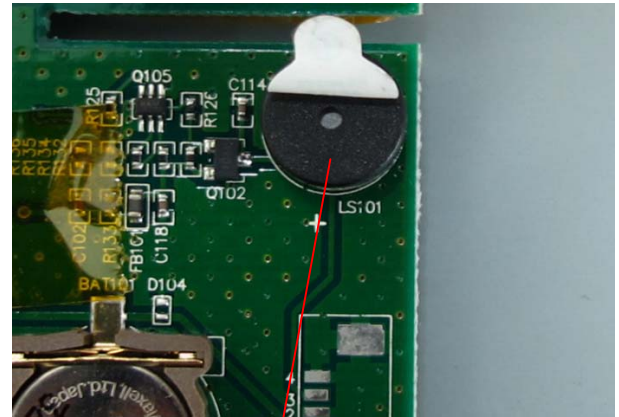
### 9.3 Mechanical Performance

Parameter	Specifications
Input Method	Styles for PCAP or Finger Available
Touch Function	1 Point
Interface	I2C
Surface Hardness	$\geq 6H$
Cover Spec.	Black Printing



## 10. Notice

### 10.1 Remove Buzzer Label



**Remove**

### 10.2 Micro SD Notice



If uC-HMI cannot detect SD card, try re-insert the SD card.

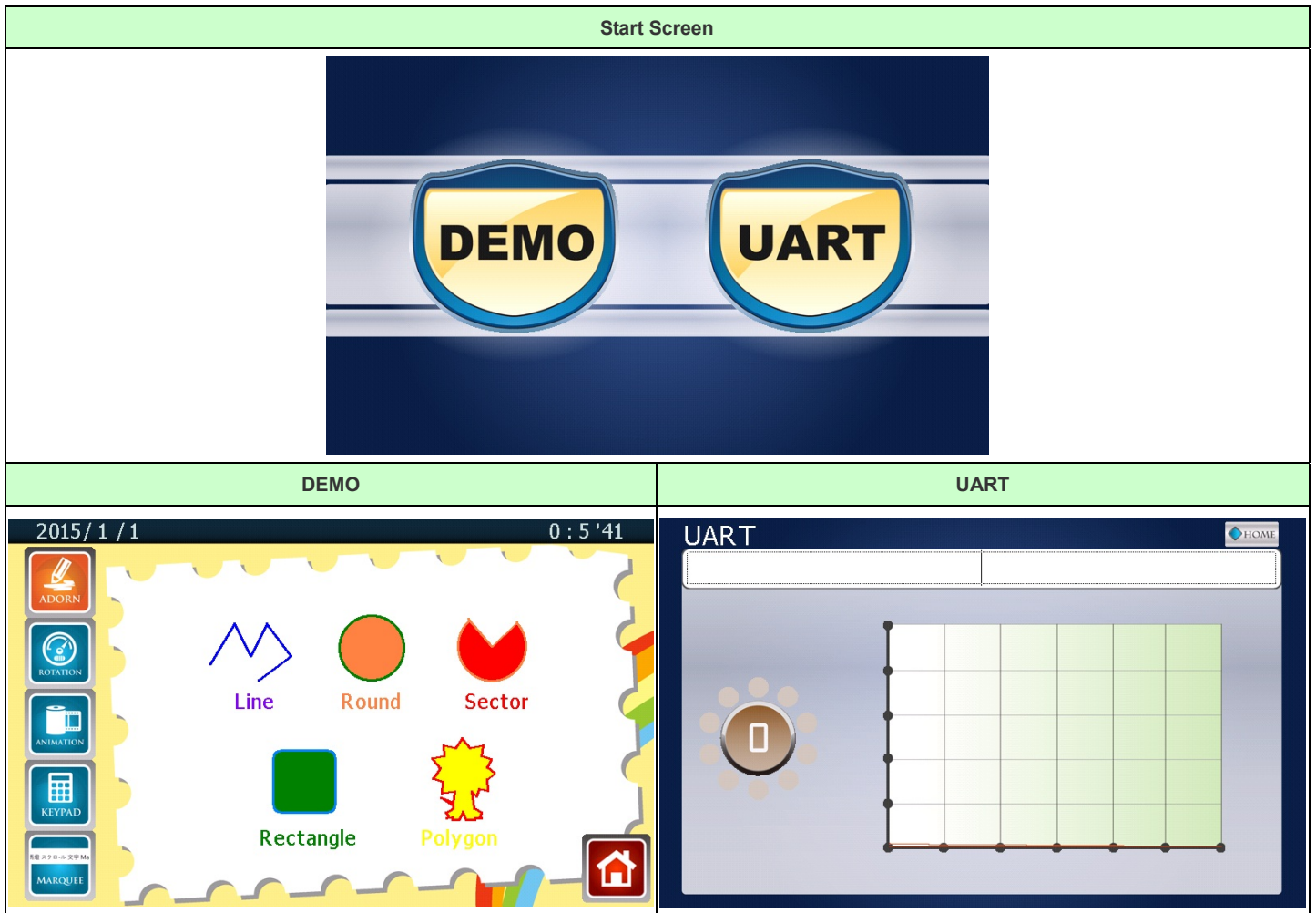
## 11. The Built-in Demo Project of the Module

### 11.1 Operation Explaining

The uC-HMI delivery is included a project.

How to use that please refer to the document as “uC-HMI\_Module\_Demo\_User\_Guide.pdf”

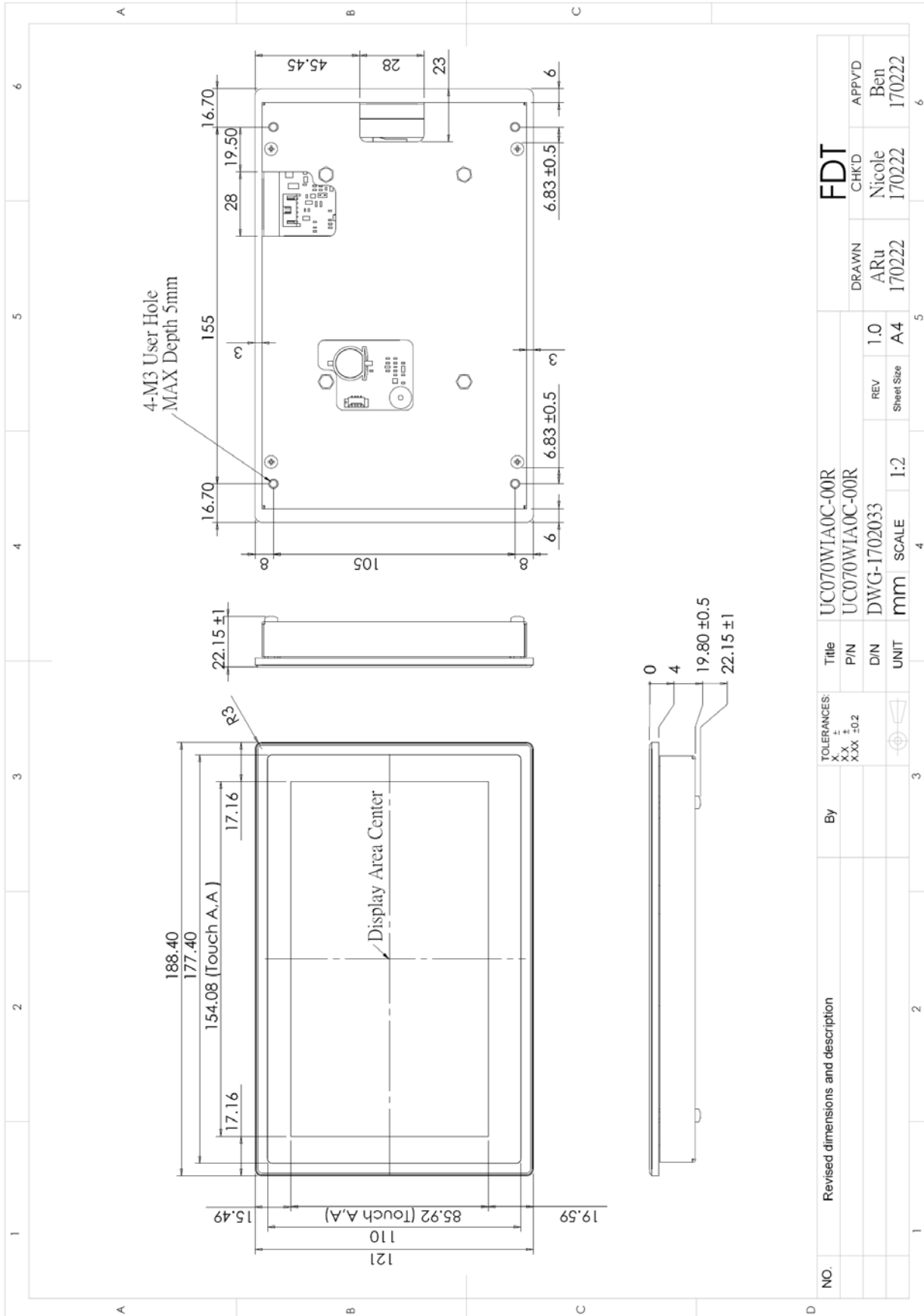
File located : <Disc:\Project of Standard Module\Documents>





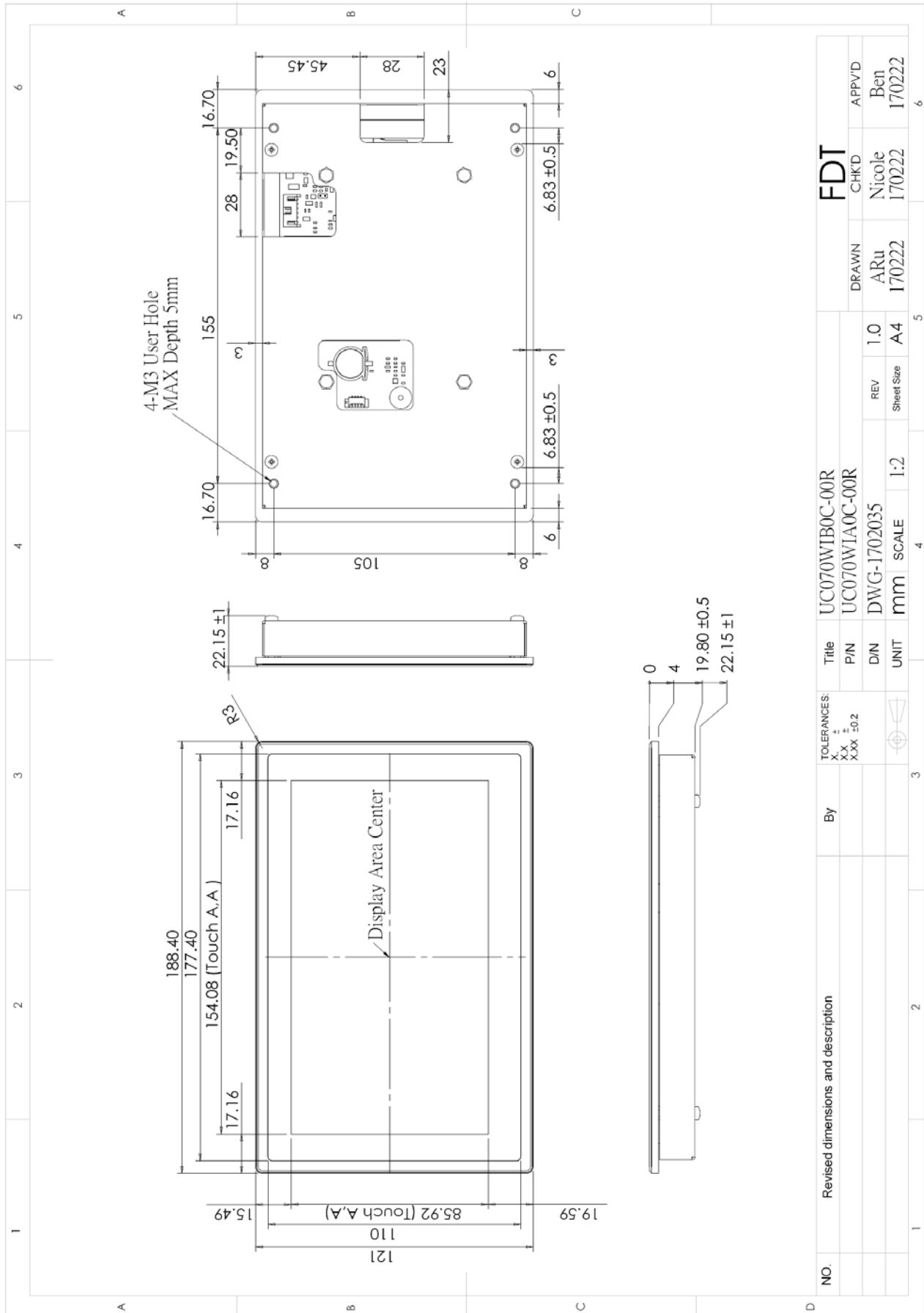
12. Dimension Information

12.1 Unit (UC070WIA0C-00R)





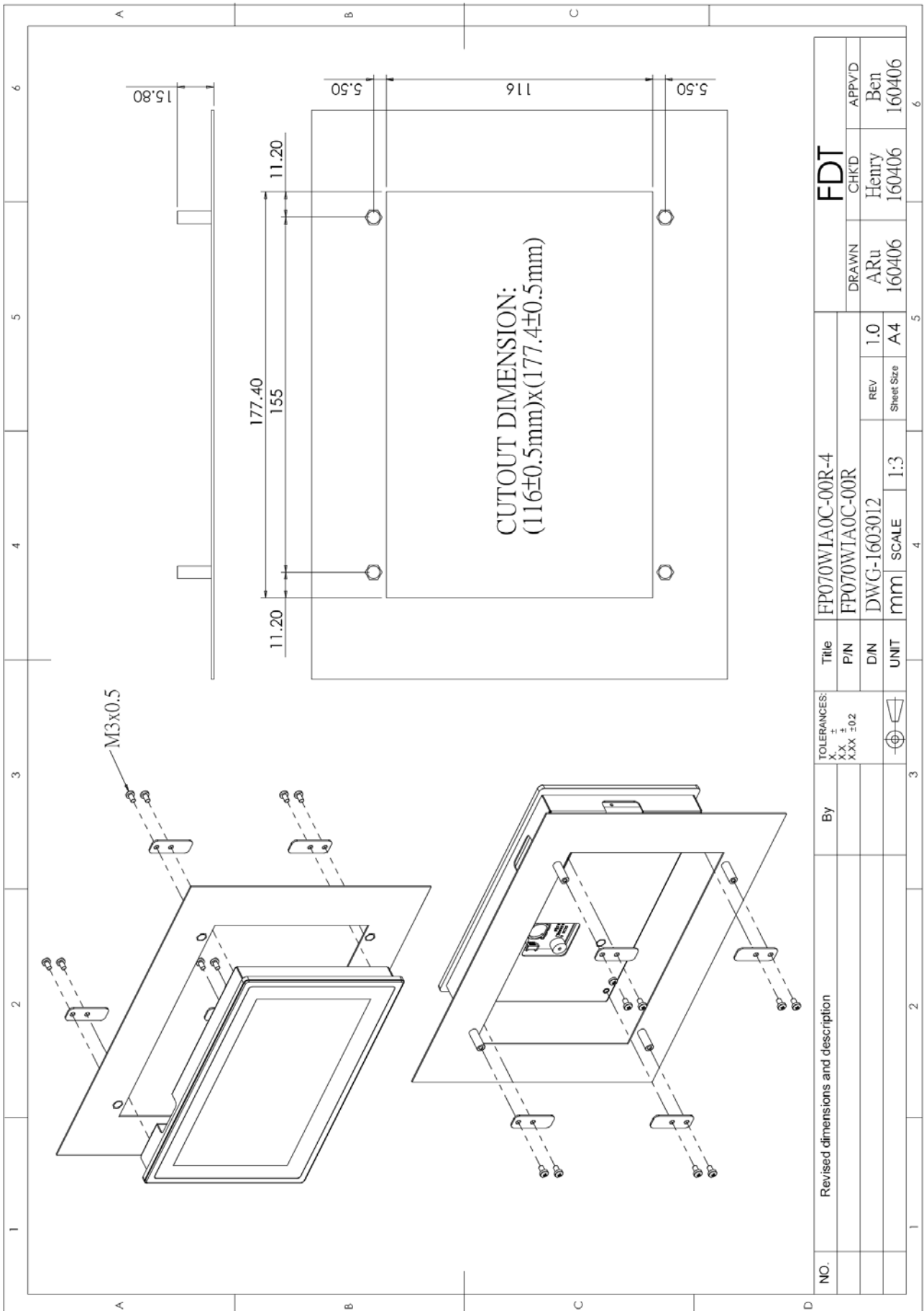
**12.2 Unit (UC070WIB0C-00R)**



NO.	Revised dimensions and description	By	TOLERANCES: X.X ± X.XX ±0.2	Title	UC070WIB0C-00R	SCALE	1:2	REV	1.0	DRAWN	ARu	CHK'D	Nicole	APP'VD	Ben
				P/N	UC070WIA0C-00R	UNIT	mm	Sheet Size	A4	170222	170222				
				D/W	DWG-1702035	SCALE	1:2								



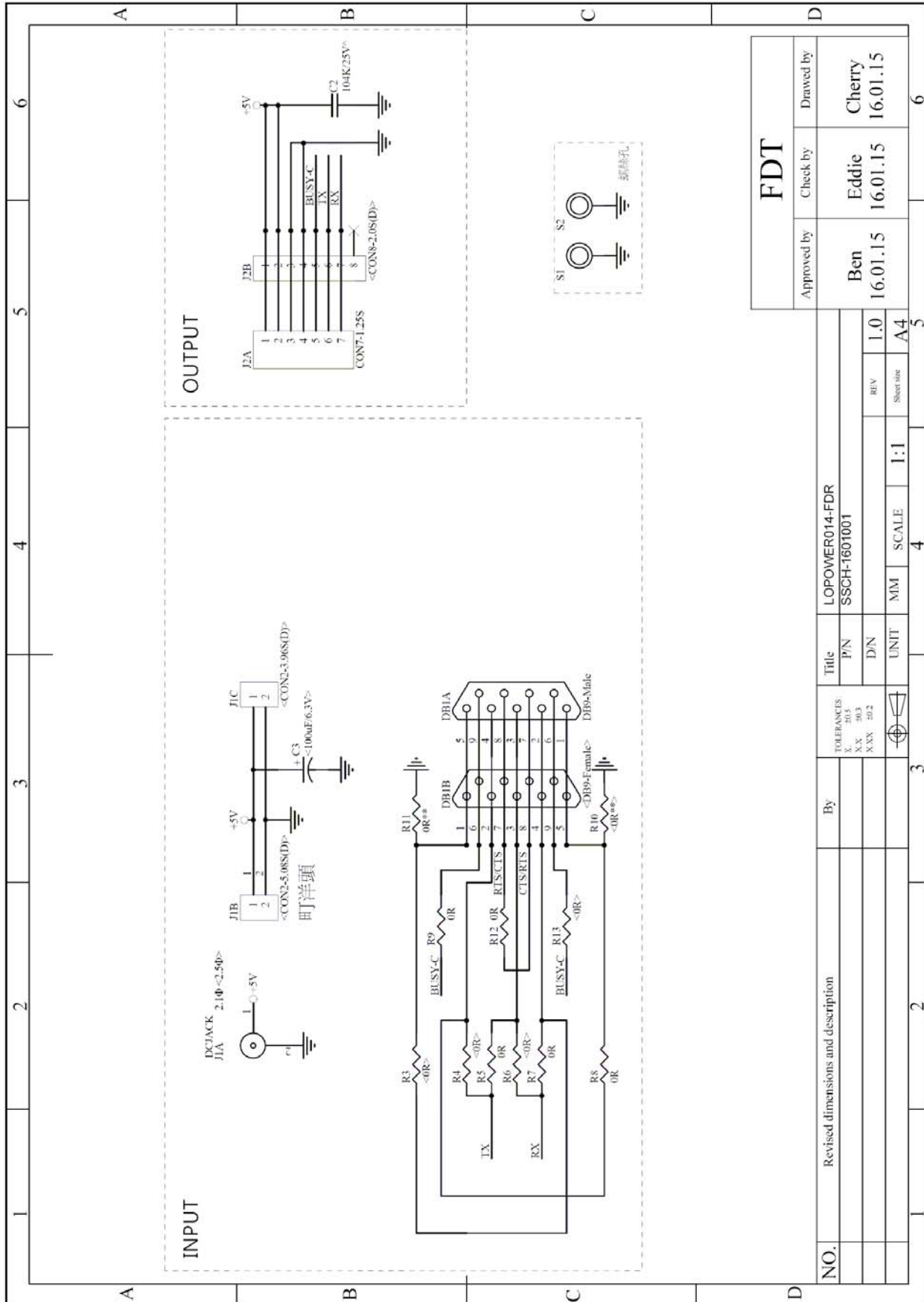
13. Installation Recommendations





14. Accessory (Drawing)

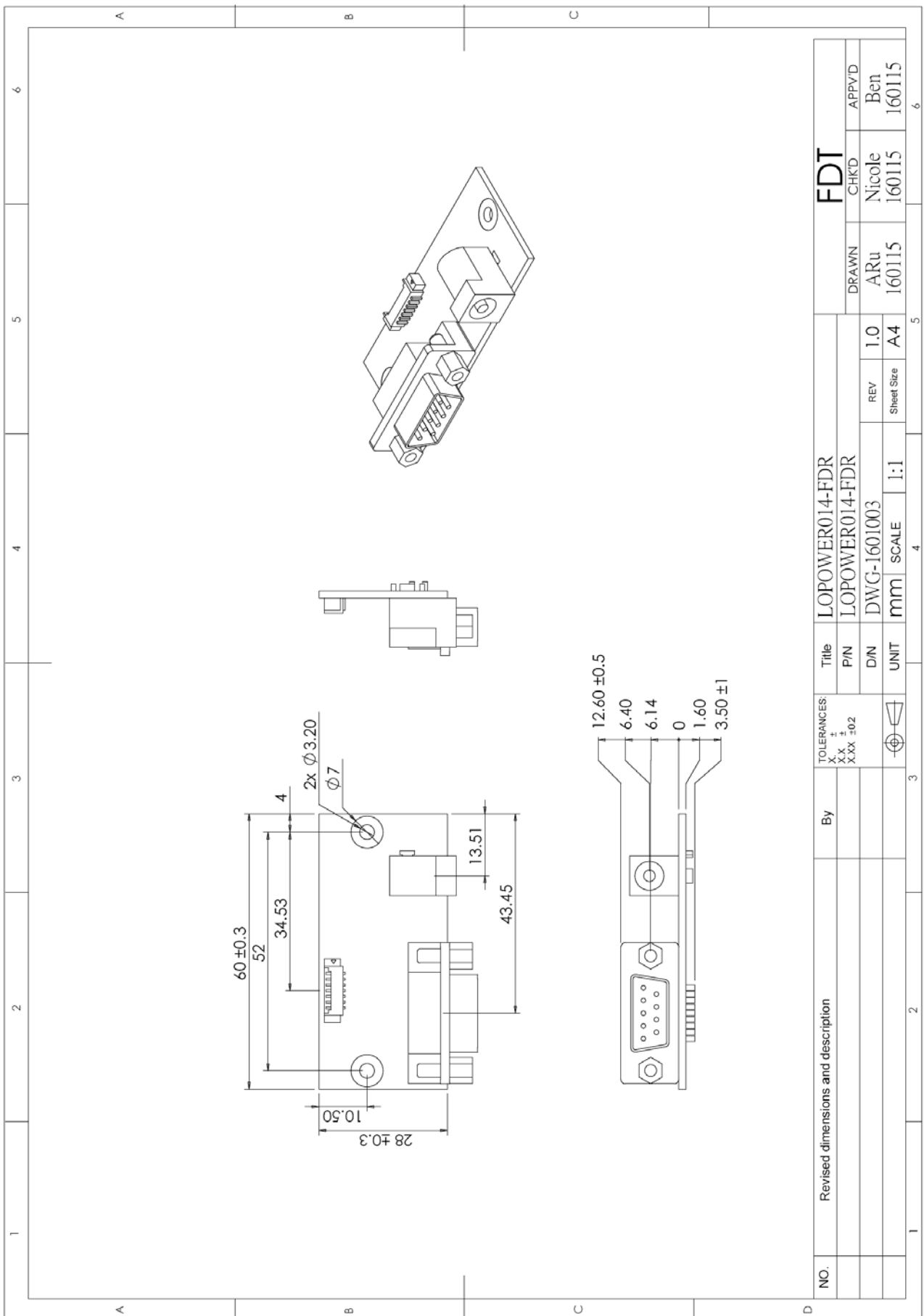
14.1 Application Circuit (Option)







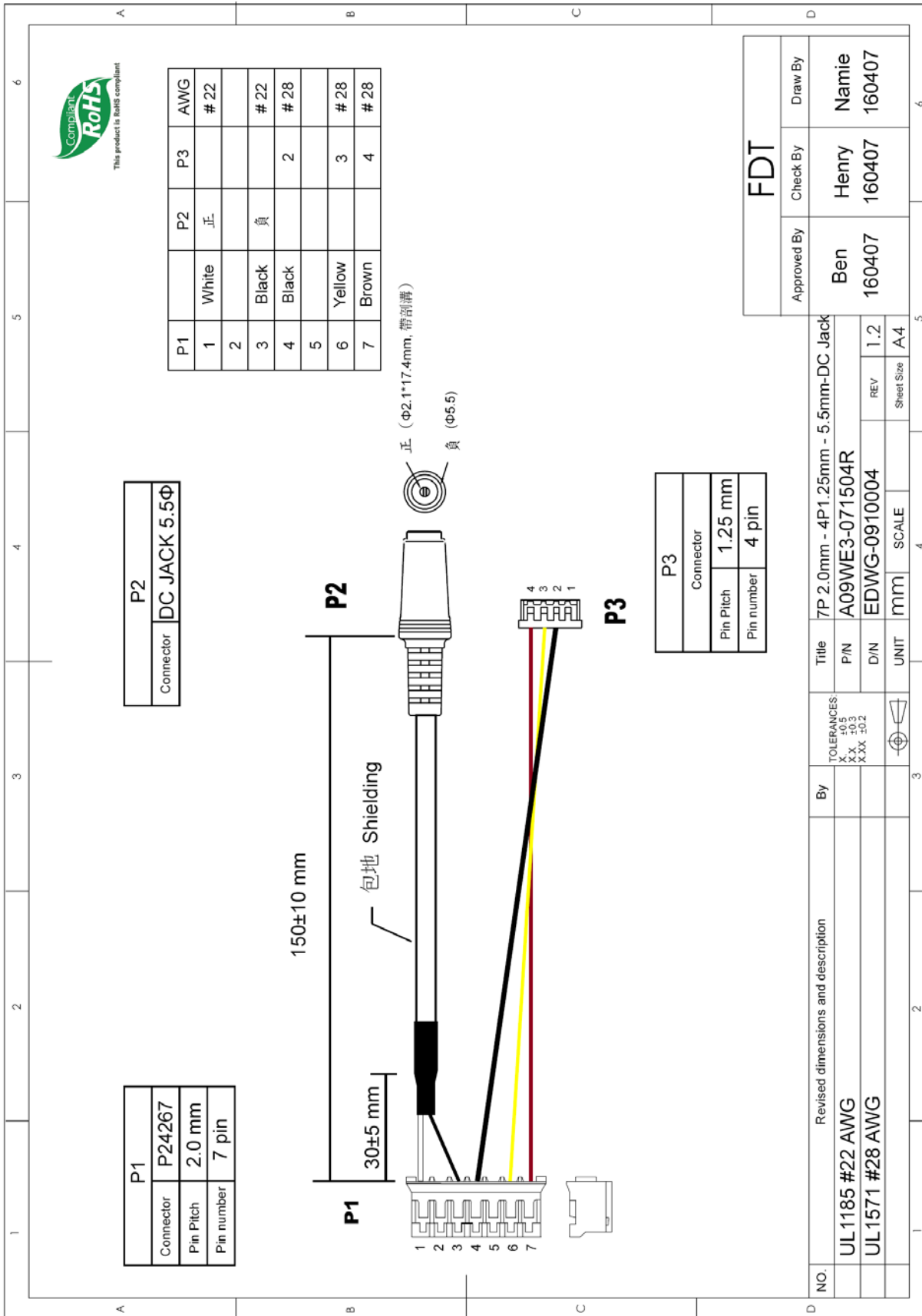
**14.2 Application Board Dimension (Option)**



NO.	Revised dimensions and description	By	TOLERANCES: X.X ± X.X ± X.X ±0.2	Title	LOPOWER014-FDR		FDT	
				P/N	LOPOWER014-FDR		DRAWN	CHK'D
				D/W	DWG-1601003		ARu	Nicole
				UNIT	mm		160115	160115
				SCALE	1:1		REV	APPV'D
							1.0	Bet
							A4	160115
							Sheet Size	160115



**14.3 LACABLE008-FDR (Option)**



## 15. Appendix

### 15.1 TFT-LCD Mechanical Specifications

Parameter	Specifications	Unit
Screen Size	7" (Diagonal)	inch
Display Format	800 x (R.G.B) x 480	dot
Active Area	154.08(W) x 85.92(H)	mm
Surface Treatment	Anti-Glare	

### 15.2 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	60	70	---	deg	
Contrast Ratio	CR	At optimized Viewing angle	400	500	---	---	
Brightness Without PCAP	L	$\theta = 0^\circ / \phi = 0$	320	400	---	cd/m <sup>2</sup>	
Brightness With PCAP	L	$\theta = 0^\circ / \phi = 0$	272	340	---	cd/m <sup>2</sup>	
LED Life Time	---	T <sub>a</sub> =+25°C	20000	---	---	Hrs	I <sub>L</sub> =180mA Note

Note: The "LED Life Time" is defined as the module brightness decrease to 50% original.



## 16. Revision History

### 16.1 Record of Revision

NO.	Date	Description	Page	Note
1.0	November 5, 2019	· Add note 3	7	