



§ SPECIFICATION APPROVAL SHEET §

Fdt Tech Module No LP080T4IB~~X~~-FDR

Description: 8" Digital TFT-LCD Module

SPEC No.: SAS-0707001

Version: 0.2

Issue Date: June 11 2008

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

Customer:

APPROVED BY:

Date: / / 08

APPROVED BY:

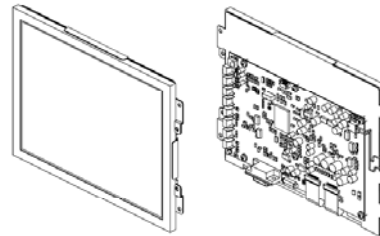
CHECKED BY:

DESIGNED BY:



FLAT DISPLAY TECHNOLOGY

8" Digital TFT-LCD Module



■ LP080T4IB~~x~~-FDR

1. General Description

1.1 Features

- INNOLUX AT080TN43 Digital TFT LCD
- Ultra Compact
- NTSC/PAL/SECAM Video Auto Switch
- Single Operation Voltage +12V
- CVBS / S-Video (Option)/ Analog RGB (PC Mode) Signal Input
- All Functions can be controlled by UART
- Built-in Key / IR Function
- Built-in LED Backlight Driver

1.2 Applications

- Portable product
- Industrial
- Hand-held
- Security
- Instrument Display
- Office Electronics

1.3 Application Precautions

Do not use the products herein for the following equipment which demands extremely high performance in terms of functionality, reliability, or accuracy.

- Aerospace equipment
- Communication equipment for trunk lines.
- Control equipment for the nuclear power industry.
- Medical equipment related to life support, etc.

The other application that demands high reliability and functionality should first contact a sales representative.

FLAT DISPLAY TECHNOLOGY

■ LP080T4IB~~x~~-FDR V0.2 

2. Contents

Contents	Page
1. General Description	1
1.1 Features	1
1.2 Applications	1
1.3 Application Precautions	1
2. Contents	2-3
3. TFT-LCD Information	4
3.1 TFT-LCD Mechanical Specifications	4
3.2 TFT-LCD Optical Characteristics	4
4. Order Information	5-6
4.1 Unit	5
4.2 Demo Board (Option)	6
5. Dimension Information	7-9
5.1 Unit (LT080T4IBA-FDR)	7
5.2 Unit (LT080T4IBE-FDR)	8
5.3 Unit (LT080T4IBF-FDR)	9
6. Pin Description	10-13
6.1 CN1: INNOLUX LCD Panel I/O Terminals (FPC 30 Pin Pitch 0.5mm UP Contact Type)	10
6.2 CN2: INNOLUX LCD Panel I/O Terminals (FPC 30Pin Pitch 0.5mm UP Contact Type)	11
6.3 J402A : Pin Assignment of Analog RGB Input (Pitch 2.0mm 14Pin, Side Entry Type) (Option)	12
6.4 J402B: Pin Assignment of Analog RGB Input (D-Sub15Pin)	12
6.5 J403A : Pin Assignment of Signal Input (Pitch 1.25mm 8Pin, Side Entry Type)	13
6.6 J101: Pin Assignment of UART (Pitch 1.25mm 4Pin, Side Entry Type)	13
7. Absolute Maximum Ratings	14
7.1 Absolute Maximum Ratings	14
8. Recommended operating conditions	15-16
8.1 Electrical Characteristics	15
8.2 VGA Mode Characteristics	15
8.3 Panel Backlight Data	15
8.4 LED Backlight Test Data	15
8.5 Optics Sample Test Data	16
9.Touch Panel Characteristics	17-18
9.1 Pin assignment (Pitch :1.0 mm)	17
9.2 Electrical Performance	17
9.3 Optical Performance	17
9.4 Mechanical Performance	17
9.5 Durability Performance	18
9.6 Environmental	18

FLAT DISPLAY TECHNOLOGY

■ LP080T4IBx-FDR V0.2 

9.7 Reliability test procedure	18
10. Operation Manual.....	19
10.1 Driver Board Manual	19
10.2 Simple Demo Board Manual	19
11. Application Schematic Diagram.....	20
11.1 Application Circuit	20
12. Accessory.....	21
12.1 MDSM208000-FDR	21

Preliminary

3. TFT-LCD Information

3.1 TFT-LCD Mechanical Specifications

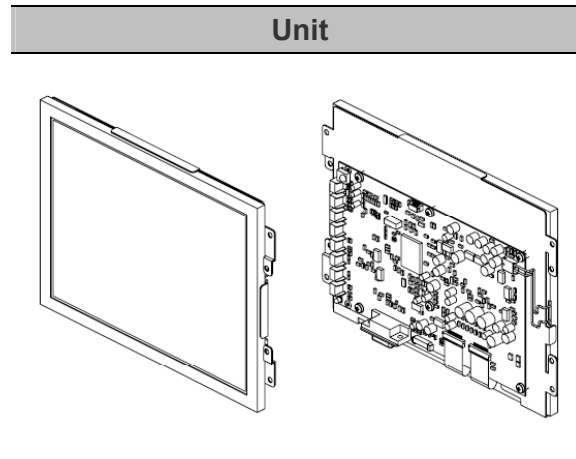
Parameter	Specifications	Unit
Screen Size	8.0 (diagonal)	inch
Display Format	800 x (R.G.B) x 600	dot
Active Area	162(W) x 121.5(H)	mm
Pixel Pitch	0.2025(W) x 0.2025(H)	mm
Pixel Configuration	Stripe	
Outline Dimension	183(W) x 141(H) x 6.3(D)	mm
Surface Treatment	Anti – Glare	
Weight	TBD	g

3.2 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	$\theta = 0^\circ$	400	500	---	---	
Response time	Rise Fall	Tr	---	10	---	ms	
		Tf	---	15	---	ms	
Uniformity	U	$\theta = 0^\circ$	70	75	---	%	
Brightness	L	$\theta = 0^\circ$	300	350	---	Cd/m ²	
White Chromaticity	x	$\theta = 0^\circ$	0.26	0.31	0.36		
	y	$\theta = 0^\circ$	0.28	0.33	0.38		

4. Order Information

4.1 Unit

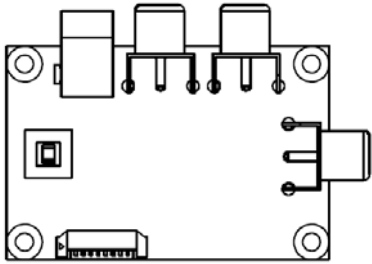


Order Part Number	CVBS		S-VIDEO		Video	VGA		TFT-LCD Panel	Bracket
	1	2	1	2	Loop-out	D-Sub15	2.0mm 14Pin	AT080TN43	A20CIN-080000R
LP080T4IBA-FDR	⊙	⊙				⊙		⊙	⊙
LP080T4IBE-FDR	⊙	⊙				⊙		⊙	⊙
LP080T4IBF-FDR	⊙	⊙				⊙		⊙	⊙

Order Part Number	USB Touch Driver Board A14LCD-40UCG2R			RS232 Touch Driver Board A14LCD-40RCG2R		
	USB Driver Board	USB Transmits Line	USB 4P-4P Cable	RS232 Driver Board	RS232 Transmits Line	RS232 4P-4P Cable
LP080T4IBA-FDR		-			-	
LP080T4IBE-FDR		⊙			-	
LP080T4IBF-FDR		-			⊙	

4.2 Demo Board (Option)

Demo Board

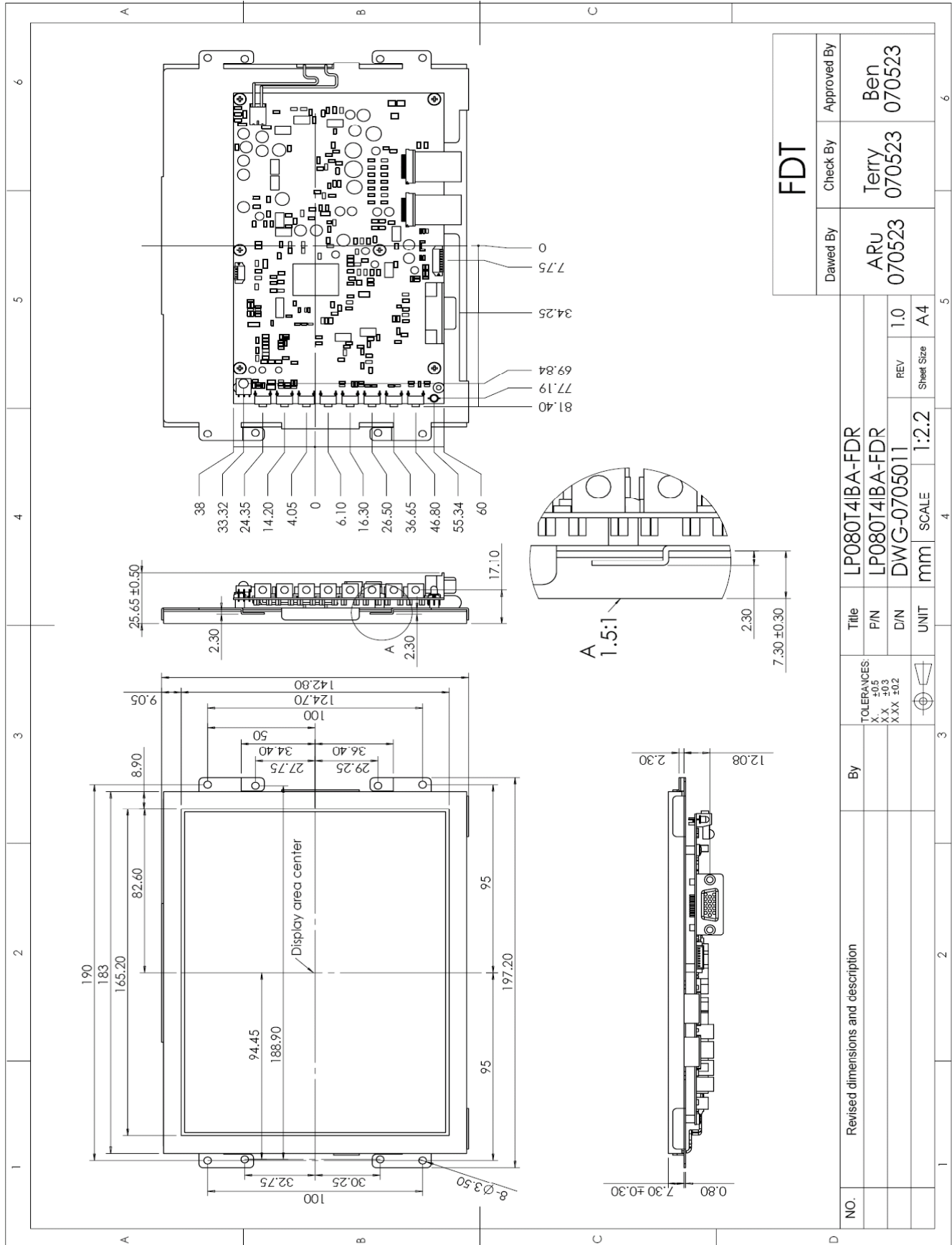


Order Part Number	Part Number	Remark
MDSM208000-FDR	Cable: A09WC2-081008R	

Preliminary

5. Dimension Information

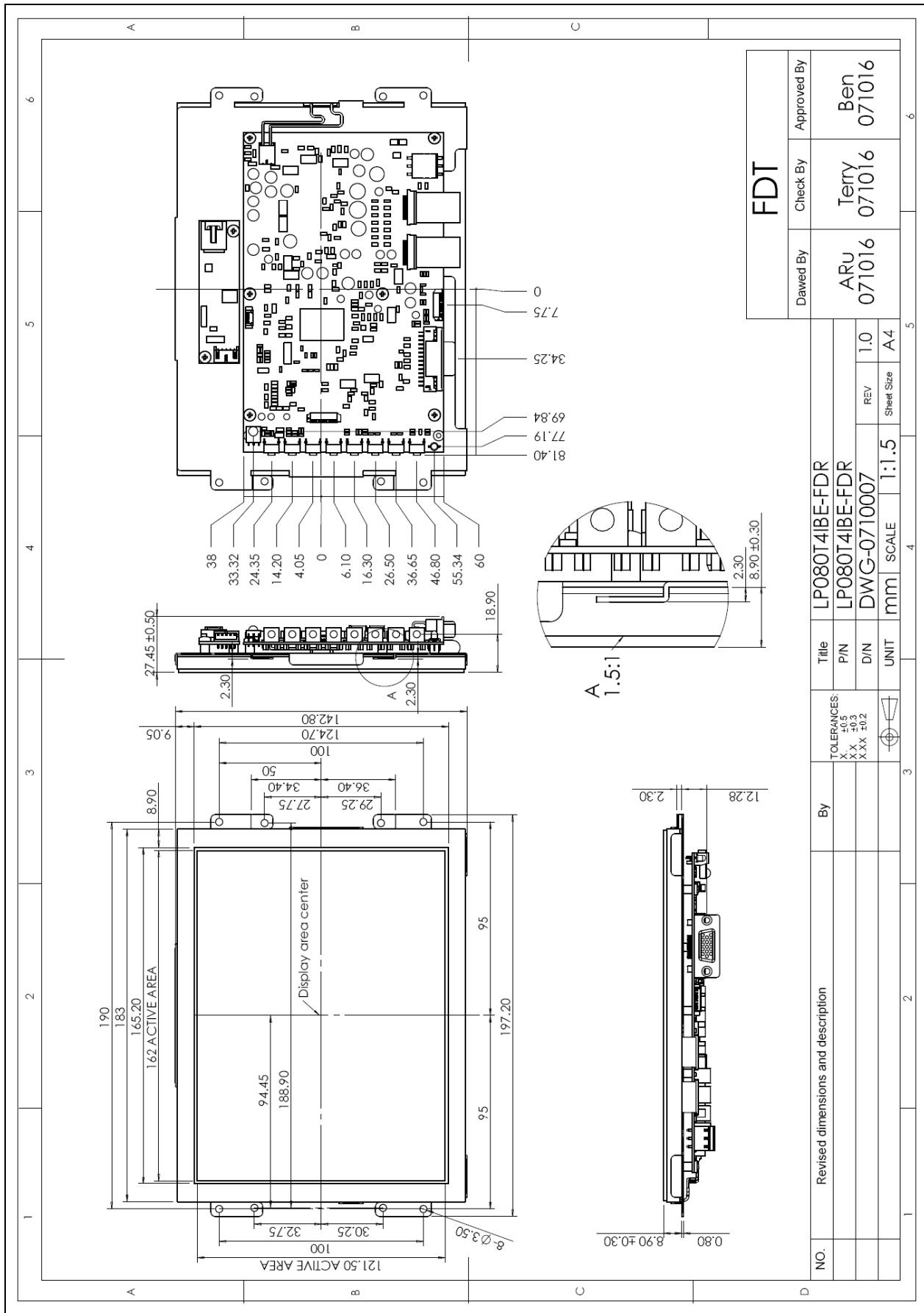
5.1 Unit (LT080T4IBA-FDR)



FDT		
Drewn By	Check By	Approved By
ARU	Terry	Ben
070523	070523	070523

NO.	Revised dimensions and description	By	Title	LP080T4IBA-FDR
	TOLERANCES:		F/N	LP080T4IBA-FDR
	X.X ±0.5		D/N	DWG-0705011
	X.X ±0.3		UNIT	mm
	X.XX ±0.2		SCALE	1:2.2
			Sheet Size	A4
			REV	1.0

5.2 Unit (LT080T4IBE-FDR)

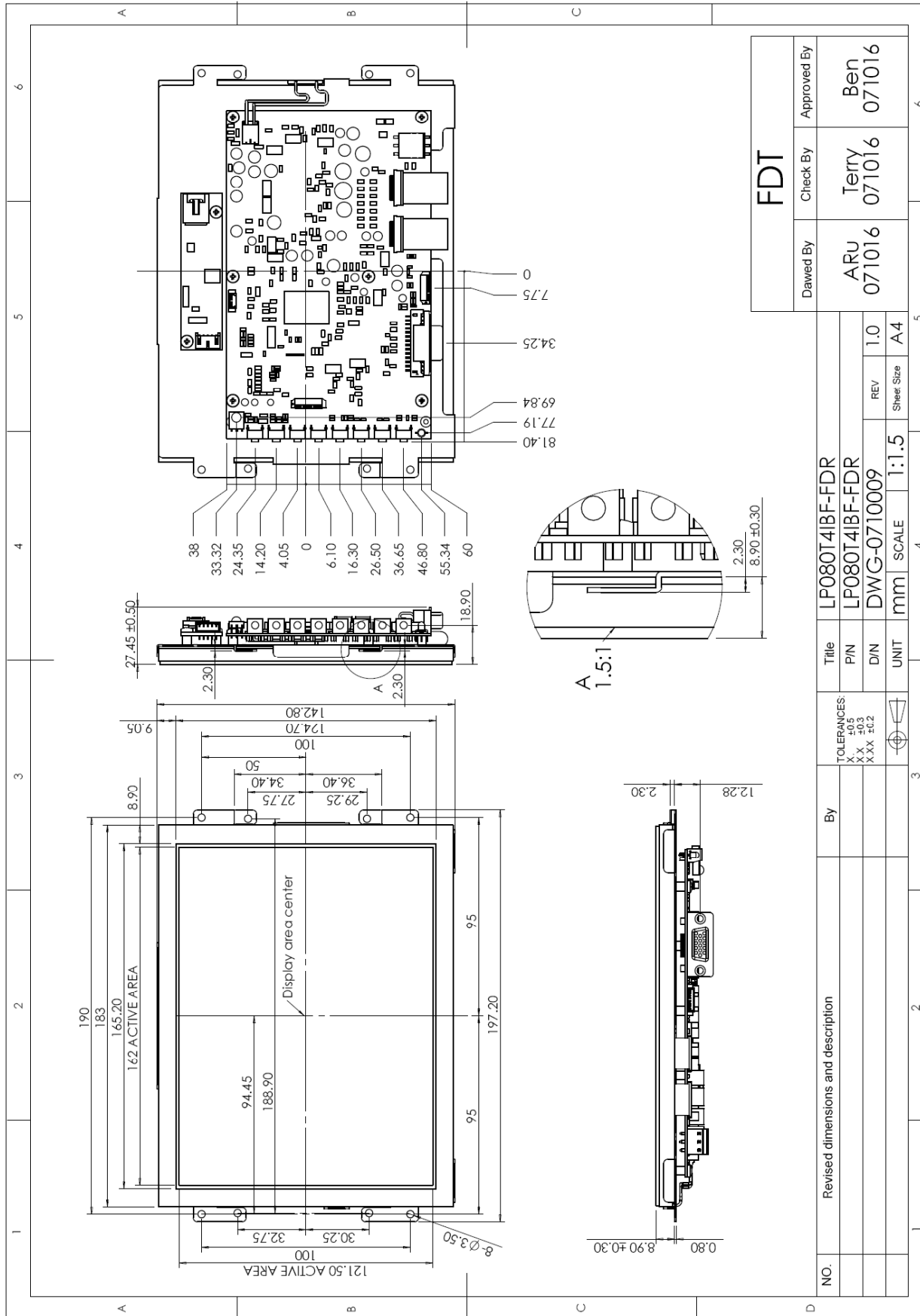


FLAT DISPLAY TECHNOLOGY

LP080T4IBx-FDR V0.2



5.3 Unit (LT080T4IBF-FDR)



FLAT DISPLAY TECHNOLOGY

■ LP080T4IBx-FDR V0.2 

6. Pin Description

6.1 CNI: INNOLUX LCD Panel I/O Terminals (FPC 30 Pin Pitch 0.5mm UP Contact Type)

Pin No	Symbol	I/O	Description	Remark
1	POL	I	Polarity Selection	
2	STVD	I/O	Vertical Start Pulse Input When U/D=H	
3	OEV	I	Output Enable	
4	CKV	I	Vertical Clock	
5	STVU	I/O	Vertical Start Pulse Input When U/D=L	
6	GND	P	Power Ground	
7	EDGSL	I	Select Rising Edge Or Falling Edge	
8	Vcc	P	Power Supply For Digital Circuit	
9	V9	I	Gamma Voltage Level 9	
10	V _{GL}	P	Gate OFF Voltage	
11	V2	I	Gamma Voltage Level 2	
12	V _{GH}	P	Gate ON Voltage	
13	V6	I	Gamma Voltage Level 6	
14	U/D	I	Up / Down Selection	
15	V _{COM}	I	Common Voltage	
16	GND	P	Power Ground	
17	AV _{DD}	P	Power Supply For Analog Circuit	
18	V14	I	Gamma Voltage Level 14	
19	V11	I	Gamma Voltage Level 11	
20	V8	I	Gamma Voltage Level 8	
21	V5	I	Gamma Voltage Level 5	
22	V3	I	Gamma Voltage Level 3	
23	GND	P	Power Ground	
24	R5	I	Red Data (MSB)	
25	R4	I	Red Data	
26	R3	I	Red Data	
27	R2	I	Red Data	
28	R1	I	Red Data	
29	R0	I	Red Data (LSB)	
30	GND	P	Power Ground	

6.2 CN2: INNOLUX LCD Panel I/O Terminal (FPC 30 Pin Pitch 0.5mm UP Contact Type)

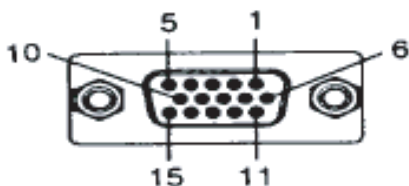
Pin No	Symbol	I/O	Description	Remark
1	GND	P	Power Ground	
2	G5	I	Green Data (MSB)	
3	G4	I	Green Data	
4	G3	I	Green Data	
5	G2	I	Green Data	
6	G1	I	Green Data	
7	G0	I	Green Data (LSB)	
8	STHL	I/O	Horizontal Start Pulse Input When R/L=H	
9	REV	I	Control Signal Are Inverted Or Not	
10	GND	I	Power Ground	
11	DCLK	I	Sample Clock	
12	Vcc	P	Power Supply For Digital Circuit	
13	STHR	I/O	Horizontal Start Pulse Input When R/L=L	
14	LD	I	Latches The Polarity Of Outputs And Switches The New Data To Outputs	
15	B5	I	Blue Data (MSB)	
16	B4	I	Blue Data	
17	B3	I	Blue Data	
18	B2	I	Blue Data	
19	B1	I	Blue Data	
20	B0	I	Blue Data (LSB)	
21	R/L	I	Right / left Selection	
22	V1	I	Gamma Voltage Level 1	
23	V4	I	Gamma Voltage Level 4	
24	V7	I	Gamma Voltage Level 7	
25	V10	I	Gamma Voltage Level 10	
26	V12	I	Gamma Voltage Level 12	
27	V13	I	Gamma Voltage Level 13	
28	AV _{DD}	P	Power Supply For Analog Circuit	
29	GND	P	Power Ground	
30	V _{COM}	I	Common Voltage	

6.3 J402A : Pin Assignment of Analog RGB Input (Pitch 2.0mm 14Pin, Side Entry Type) Option

Pin No	Symbol	I/O	Description	Remark
1	VGA-Det	I	VGA Detect	
2	DDC-SCL	-	No Connection	
3	DDC-SDA	-	No Connection	
4	GND	-	Ground	
5	VGA5V	I	VGA +5V Input	
6	VS-IN	-	TTL Vertical Sync	
7	HS-IN	-	TTL Horizontal Sync	
8	AGND	-	Analog Ground	
9	RI+	I	Analog Red Signal	
10	AGND	-	Analog Ground	
11	GI+	I	Analog Green Signal	
12	AGND	-	Analog Ground	
13	BI+	I	Analog Blue Signal	
14	GND_U	-	Ground	

6.4 J402B : Pin Assignment of Analog RGB Input (D-Sub 15Pin)

Pin No	Symbol	I/O	Description	Remark
1	RI+	I	Analog Red Signal	
2	GI+	I	Analog Green Signal	
3	BI+	I	Analog Blue Signal	
4	NC	-	No Connection	
5	GND	-	Ground	
6	AGND	-	Analog Ground	
7	AGND	-	Analog Ground	
8	AGND	-	Analog Ground	
9	VGA5V	I	VGA +5V Input	
10	VGA-Det	I	VGA Detect	
11	NC	-	No Connection	
12	DDC-SDA	-	No Connection	
13	HS_IN	I	TTL Horizontal sync	
14	VS_IN	I	TTL Vertical sync	
15	DDC-SCL	-	No Connection	



6.5 J403A : Pin Assignment of Signal Input (Pitch 1.25mm 8Pin, Side Entry Type)

Pin No	Symbol	I/O	Description	Remark
1	VCC12V	I	+12V Input Voltage	
2	VCC12V	I	+12V Input Voltage	
3	GND_D	-	Ground	
4	GND_D	-	Ground	
5	VIDEO1	I	Video1 Input Signal	
6	GND_A	-	Ground For Video1	
7	VIDEO2	I	Video2 Input Signal	
8	GND_A	-	Ground For Video2	

6.6 J101: Pin Assignment of UART (Pitch 1.25mm 4Pin, Side Entry Type)

Pin No	Symbol	I/O	Description	Remark
1	TX	O	UART Transmission Data	
2	RX	I	UART Receive Data	
3	GND	-	Ground	
4	+5VA	O	+5V Output Voltage	

Note: About UART command list please contact FDT sales.

7. Absolute Maximum Ratings

7.1 Absolute Maximum Ratings

Parameter	Symbol	Min	Max	Unit	Remark
Input Voltage	Vin	+9	+15	V	
Video Input Signal	Video in	0.5	2.0	Vp-p	@75Ω
S-Video Input Signal	S-Video in	0.5	2.0	Vp-p	@75Ω
Analog RGB Input Signal	Analog RGB in	0.5	2.0	Vp-p	@75Ω
Digital Input Signal	TTL	+0.3	+3.6	V	
Operating Temperature		-10	+60	°C	
Storage Temperature		-20	+70	°C	

FLAT DISPLAY TECHNOLOGY

■ LP080T4IBx-FDR V0.2



8. Recommended operating conditions

8.1 Electrical Characteristics

Parameter	Symbol	I/O	Min	Typ	Max	Unit	Note
Input Voltage	Vin	I	+10	+12	+14	V	
Total Current	Iin	I		333		mA	
Power Consumption		I		4		W	@+12V
Output Voltage	VDD	O	+3.2	+3.3	+3.4	V	I=10mA
Video Input Signal	Video in	I		1.0		Vp-p	@75Ω
S-Video Input Signal	S-Video in	Y		0.7		Vp-p	@75Ω
		C		0.286		Vp-p	@75Ω
Analog RGB Input Signal	Analog RGB in	RGB		0.7		Vp-p	@75Ω

8.2 VGA Mode Characteristics

Dots per inch	H	Unit	Polarity	V	Unit	Polarity	Note
640*480	31.469	KHz	Negative	59.940	Hz	Negative	
800*600	37.879	KHz	Positive	60.317	Hz	Positive	
1024*768	48.363	KHz	Negative	60.004	Hz	Negative	
1280*1024	63.981	KHz	Positive	60.020	Hz	Positive	

8.3 Panel Backlight Data

Parameter	Symbol	Min	Typ	Max	Unit	Note
LED Backlight Voltage	VLED	--	9.9	--	Vrms	ILED=20mA, (±10%)
LED Backlight Current	ILED	--	20	--	mA	
LED Life Time	--	20000	--	--	Hr	

8.4 LED Backlight Test Data

Parameter	Symbol	Min	Typ	Max	Unit	Note
LED Backlight Voltage	VLED		9.73		V	
LED Backlight Current	ILED		20		mA	

Note: Ta= 25°C @+12V

FLAT DISPLAY TECHNOLOGY

■ LP080T4IBx-FDR V0.2 

8.5 Optics Sample Test Data

Parameter	White Window	White Window (Touch)	Red	Green	Blue	Remark
S/N : 001 x	0.2976	0.3016	0.5617	0.3379	0.1465	
y	0.3347	0.3377	0.3667	0.5938	0.1088	±15%
L(cd/m ²)	315.6	238.4				
TC(°K)	7289.5	7051				

NOTE : 1. Luminance Meter : BM-7 FAST(TOPCON)

2.Video Pattern Generator: FLUKE PM54200

3. Measurement Distance : 500mm±50mm

4. TOPCON BM-7 Luminance Meter 2° filed of view is used in the testing

(After 10min ~20min operation)

Preliminary

FLAT DISPLAY TECHNOLOGY

■ LP080T4IBx-FDR V0.2 

9.Touch Panel Characteristics

9.1 Pin assignment (Pitch :1.0 mm)

Pin No	Symbol	Description	Remark
1	X1	Lower electrode X (Left side)	
2	Y1	Upper electrode Y (Down side)	
3	X2	Lower electrode X (Right side)	
4	Y2	Upper electrode Y (Upper side)	

9.2 Electrical Performance

Parameter	Symbol	Min	Typ	Max	Unit	Remark
Terminal Resistance	X	300	-	1100	Ω	
	Y	150	-	650	Ω	
Input Voltage	VT	-	-	7.0	V	
Linearity		-	-	1.5	%	
Insulation Impedance		20	-	-	M Ω	DC 25V
Response Time		-	-	10	ms	

9.3 Optical Performance

Parameter	Specifications
Transparency	$\geq 82\%$ Typ.
Haze	5.0% Typ.

9.4 Mechanical Performance

Parameter	Specifications
Input Method	Finger or stylus pen
Operating Force	$\leq 50\text{gf}$
Surface Hardness	3H or more

9.5 Durability Performance

Parameter	Specifications
Hitting Durability	≥ 1000000 times, with R8.0 mm silicon rubber,200g,5Hz
Sliding Durability	≥ 100000 times, with R0.8 mm polyacetal stylus, 250g, 60 mm / sec

9.6 Environmental

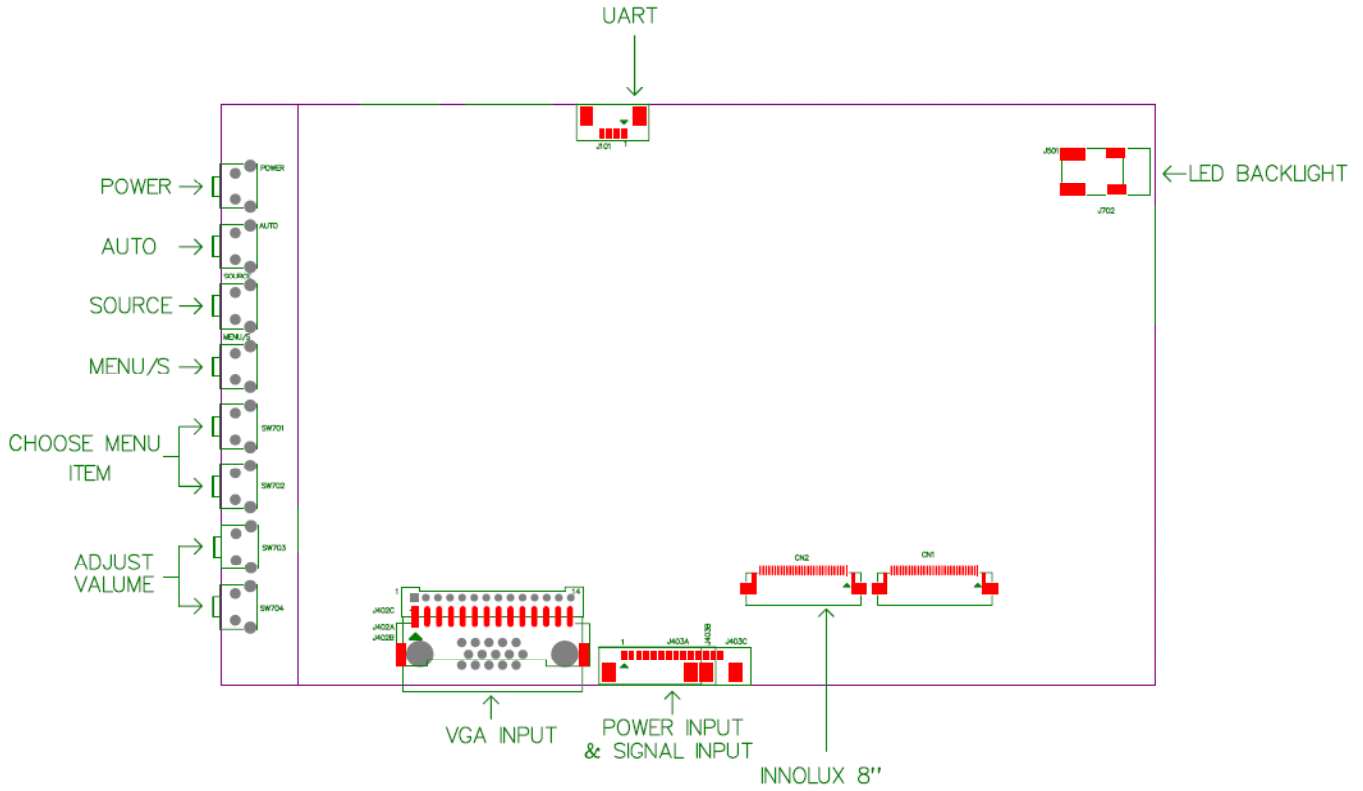
Parameter	Specifications
Operating Temp.	-10°C~60°C (Except dew condensation)
Storage Temp.	-30°C~70°C (Except dew condensation)

9.7 Reliability test procedure

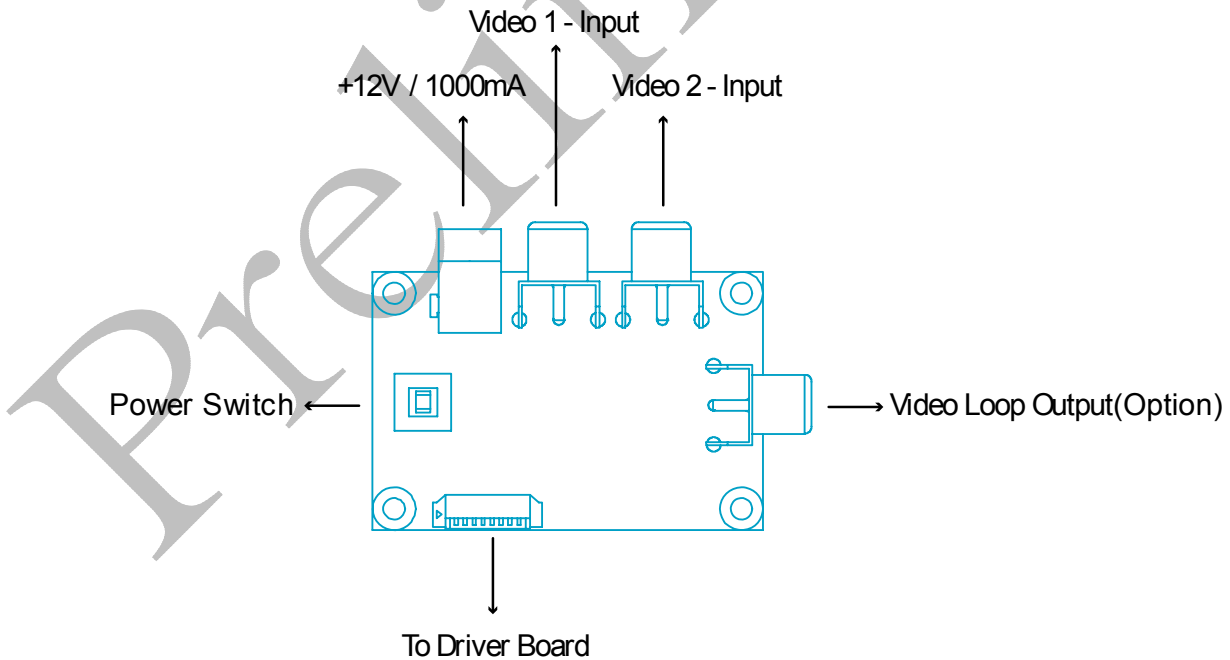
Parameter	Specifications
High temperature storage test	70°C for 240 hours.
Low temperature storage test	-30°C for 240 hours.
Thermal Cycling	-30°C (0.5 hr each)~70°C (0.5 hr each) for 50 cycles.
High temperature and high humidity	40°C, 95%RH for 240 hours.

10. Operation manual

10.1 Driver Board Manual

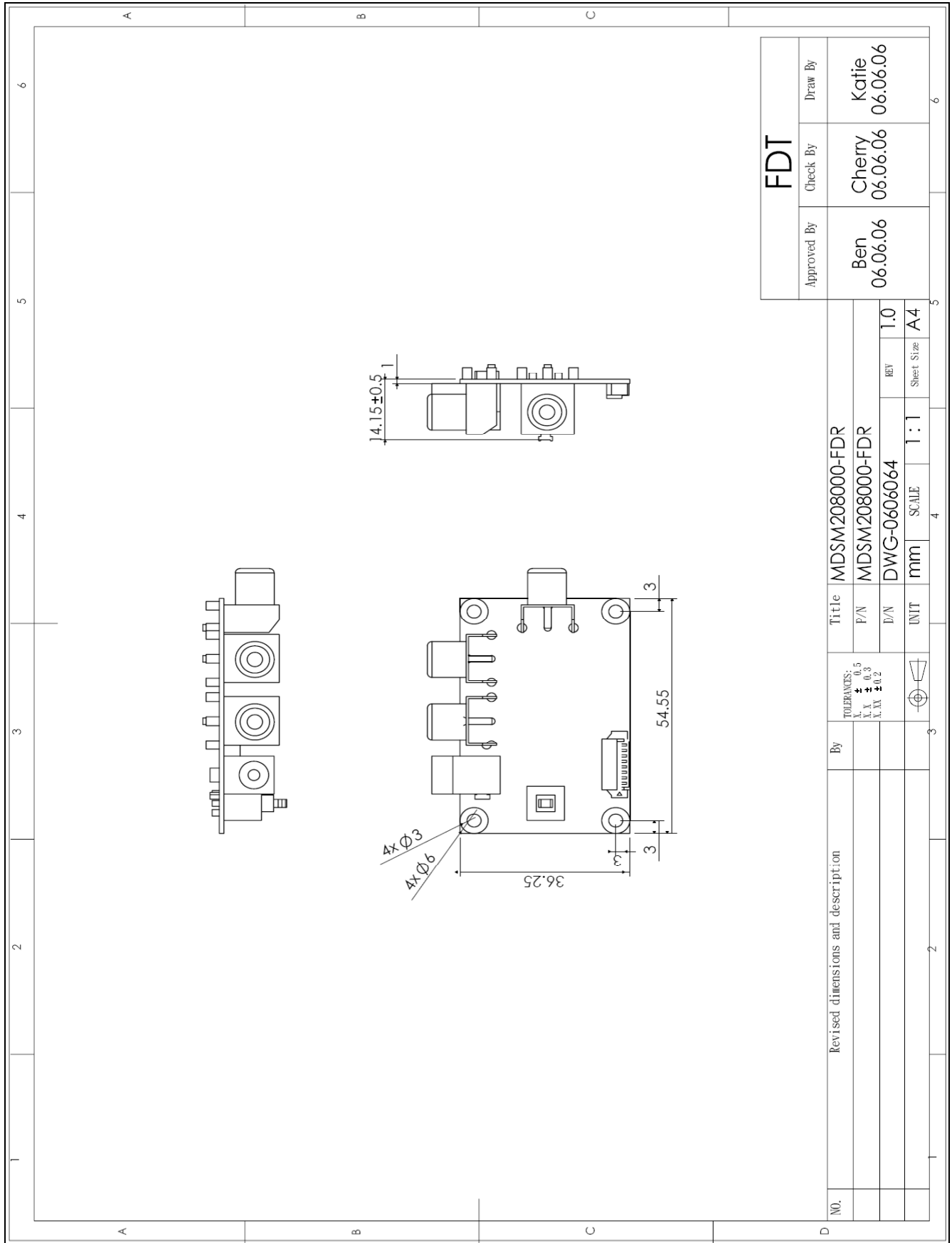


10.2 Simple Demo Board Manual



12. Accessory

12.1 MDSM208000-FDR



FLAT DISPLAY TECHNOLOGY