

DP-0431-11A Datasheet



1 Introduction

The DP-0431-11A is a 4.3-inch TFT-LCD module with a resolution of 480 × 272 pixels. It integrates a TFT-LCD panel, driver ICs (ILI6480), flexible printed circuit (FPC), backlight unit, and a resistive touch panel (RTP).

With support for 16.7 million colors through an RGB interface, the DP-0431-11A delivers vivid visuals and dependable performance, making it suitable for a wide range of display applications.

1.1 Features

- 4.3" TFT-LCD with 480 × 272 resolution and integrated resistive touch panel (RTP)
 - Supports 16.7M colors for vivid and accurate display output
 - RGB interface for stable and reliable signal transmission
- Compliant with RoHS environmental requirements

Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted or reproduced in any material or electronic form without the prior written consent of the copyright holder. This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. Bridgetek Pte Ltd will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device, or system in which the failure of the product might reasonably be expected to result in personal injury. This document provides preliminary information that may be subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Bridgetek Pte Ltd, 1 Tai Seng Avenue, #03-05, Singapore 4536464. Singapore Registered Company Number: 201542387H

2 Part Numbers/Ordering Information

Part No.	Description
DP-0431-11A	TFT Display 4.3 inch (480*272 resolution) with Resistive Touch Panel

Table 1 - Part Number/Ordering Information

Table of Contents

1	Introduction	1
1.1	Features	1
2	Part Numbers/Ordering Information	2
3	General Specifications	5
4	Hardware Description	6
4.1	TFT-LCD Interface Pin Assignment	6
5	Specifications	8
5.1	Absolute Maximum Ratings	8
5.1.1	Electrical Absolute Maximum Ratings	8
5.1.2	Environmental Absolute Maximum Ratings	8
5.2	Electrical Specifications	8
5.2.1	Electrical Characteristics	8
5.2.2	LED Backlight Specification	9
5.3	Parallel RGB Input Timing	10
5.4	Optical Specifications	10
6	Reliability Test Items	14
7	Dimension	15
8	Disclaimer Notice: Use of Third-Party Software or Websites	16
9	Warranty Statement	17
10	Contact Information	18
Appendix A – References		19
Document References		19
Acronyms and Abbreviations		19
Appendix B – List of Tables & Figures		20
List of Tables		20
List of Figures		20

Appendix C – Revision History.....21

3 General Specifications

Item	Specification	Unit	Note
LCD Type	TFT	-	
LCD Size	4.3	inch	
Number of Pixels	480(H) x 272(V)	pixels	
Viewing Direction	12	o'clock	
Interface	24-bit RGB		
Display Colors	16.7M Colors (RGB 8 bit)	colors	Note 2
Module Size	105.50(H) x 67.20(V) x 4.10(D)	mm	Note 3
Active Area	95.04(H) x 53.86(V)	mm	
Display Driver IC	ILI6480	-	
Touch Panel	Resistive Touch Panel	-	
Operation Temperature	-20~+70°C	°C	
Storage Temperature	-30~+80°C	°C	

Table 2 - General Specifications**Note:**

1. Complies with environmental protection requirements and is RoHS compliant.
2. Color tune is slightly changed by temperature and driving voltage.
3. Module size excludes FPC and solder; with RTP.

4 Hardware Description

The DP-0431-11A features a 4.3-inch TFT-LCD with a 480 × 272 resolution, integrated with a resistive touch panel.

4.1 TFT-LCD Interface Pin Assignment

The interface connector pin configuration is described below.
 40-position 0.5mm pitch, FPC connector

Pin Number	Symbol	Type	Description
1	VLED-	P	LED backlight (Cathode)
2	VLED+	P	LED backlight (Anode)
3	GND	P	Ground
4	VCC	P	Power Supply
5	R0	I	Red Data Input
6	R1	I	Red Data Input
7	R2	I	Red Data Input
8	R3	I	Red Data Input
9	R4	I	Red Data Input
10	R5	I	Red Data Input
11	R6	I	Red Data Input
12	R7	I	Red Data Input
13	G0	I	Green Data Input
14	G1	I	Green Data Input
15	G2	I	Green Data Input
16	G3	I	Green Data Input
17	G4	I	Green Data Input
18	G5	I	Green Data Input
19	G6	I	Green Data Input
20	G7	I	Green Data Input
21	B0	I	Blue Data Input
22	B1	I	Blue Data Input
23	B2	I	Blue Data Input
24	B3	I	Blue Data Input
25	B4	I	Blue Data Input
26	B5	I	Blue Data Input
27	B6	I	Blue Data Input
28	B7	I	Blue Data Input
29	GND	P	Ground
30	PCLK	I	Data Clock
31	DISP	I	Normal Display and Standby Mode select pin
32	HSYNC	I	Line Sync Signal
33	VSYNC	I	Frame Sync Signal
34	DE	I	Data Enable Pin
35	NC	-	No Connection

36	GND	P	Ground
37	XR	O	Touch Panel Control Pin
38	YD	O	Touch Panel Control Pin
39	XL	O	Touch Panel Control Pin
40	YU	O	Touch Panel Control Pin

Table 3 - TFT-LCD Interface Pin Definition

5 Specifications

5.1 Absolute Maximum Ratings

Condition: $V_{SS}=0V$, $T_a=25^\circ C$

Item	Symbol	MIN.	MAX.	Unit
Power Supply Voltage	V _{CC}	-0.3	3.6	V
Logic Signal Input/Output Voltage	V _{I0VCC}	-0.3	V _{CC} +0.5	

Table 4 - Electrical Absolute Maximum Ratings

Note:

1. Permanent damage to the LCD module may occur if operated beyond the specified limits. Operation beyond the specified electrical characteristics may lead to malfunction or reduced reliability.
2. V_{CC} must always be greater than V_{SS}.

5.1.2 Environmental Absolute Maximum Ratings

Item	Storage		Operating		Note
	MIN.	MAX.	MIN.	MAX.	
Ambient Temperature	-30°C	80°C	-20°C	70°C	Note 1, 2
Humidity	-	-	-	-	Note 3

Table 5 - Environmental Absolute Maximum Ratings

Note:

1. Response time decreases at low operating temperatures.
2. Background color may vary slightly with ambient temperature; this phenomenon is reversible.
3. $T_a <= 40^\circ C$: 85%RH MAX
 $T_a >= 40^\circ C$: Absolute humidity must not exceed the equivalent of 85% RH at 40°C.

5.2 Electrical Specifications

5.2.1 Electrical Characteristics

Condition: $V_{SS}=0V$, $T_a=25^\circ C$

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Power Supply	V _{CC}	3.0	3.3	3.6	V	
Input Voltage	'H'	V _{IH}	0.8* V _{CC}	-	V _{CC}	V
	'L'	V _{IL}	0	-	0.2*V _{CC}	V
Current Consumption	I _{CC1}	-	20	30	mA	Normal mode, Note 2
	I _{CC2}	-	0.03	0.09	mA	Sleep mode, Note 2
Clock Frequency	f _{CLK}	-	9	12	MHz	

Table 6 - Electrical Characteristics

Note:

1. Measured at optimum contrast in transmissive mode.
2. Tested in 1x1 chessboard pattern.

5.2.2 LED Backlight Specification

The backlight consists of 10 white LEDs arranged in a 5×2 matrix, providing uniform illumination across the display.

Condition: $V_{SS}=0V$, $T_a=25^{\circ}\text{C}$

Item	Symbol	Min.	Typ.	Max.	Unit	Note
Supply Voltage	-	15	16	17.2	V	Note 1
Supply Current	I_f	-	40	50	mA	Note 2
Forward Current	Normal	I_{pn}	-	40	-	mA

Table 7 - LED Backlight Specification

Note:

1. $V_{LED} = V_{LED}(+) - V_{LED}(-)$
2. The LED current is 20mA.
It is recommended to drive the LED using a constant current mode.
3. The forward current versus ambient temperature characteristics shown in Figure 1 are specified per LED string.

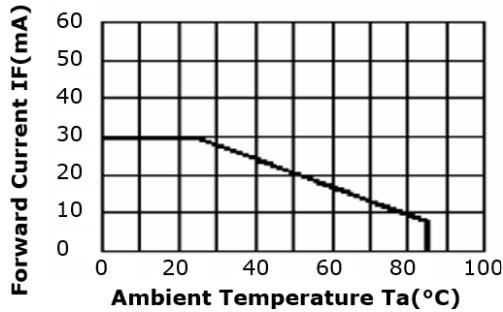


Figure 1 - Forward Current vs Ambient Temperature

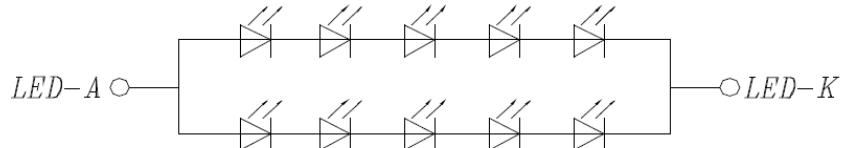


Figure 2 - Backlight LED Circuit

5.3 Parallel RGB Input Timing

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency	f_{clk}	5	9	12	MHz
HSD period time	Th	520	525	800	DCLK
HSD display area	Thd		480		DCLK
HSD back porch	$Thbp$	36	40	255	DCLK
HSD front porch	$Thfp$	4	5	65	DCLK
VSD period time	Tv	277	288	400	H
VSD display area	Tvd		272		H
VSD back porch	$Tvbp$	3	8	31	H
VSD front porch	$Tvfp$	2	8	97	H

Table 8 - Parallel RGB Input Timing

5.4 Optical Specifications

All optical specifications are measured under typical condition (Note 1, 2)

Item	Symbol	Condition	Min.	Typ.	Max.	Unit	Note
Brightness	B_p	$\theta=0^\circ$ $\Phi=0^\circ$	-	350	-	Cd/m^2	Note 1
Uniformity	ΔB_p		70	80	-	%	Note 1 Note 2
Viewing Angle	3:00	$Cr \geq 10$	-	45	-	Deg	Note 3
	6:00		-	20	-		
	9:00		-	45	-		
	12:00		-	40	-		
Contrast Ratio	Cr	$\theta=0^\circ$ $\Phi=0^\circ$	350	500	-	-	Note 4
Response Time	T_r		-	10	-	ms	Note 5
	T_f		-	10	-	ms	
Color of CIE Coordinate	W	$\theta=0^\circ$ $\Phi=0^\circ$		0.28		-	Note 1 Note 6
	x			0.33		-	
	y			0.51		-	
	R			0.34		-	
	X			0.31		-	
	y			0.56		-	
	G			0.15		-	
	x			0.14		-	
	B		50	60	-	%	
	y						
NTSC Ratio	S						

Table 9 - Optical Specifications

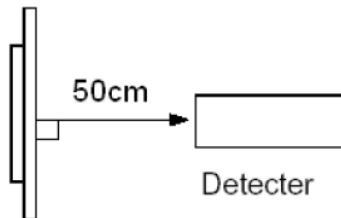
Remark: Parameters may vary slightly depending on temperature, driving voltage, and material.

Note:

1. Data are measured after the LEDs are turned on for 5 minutes with the LCM displaying full white. Brightness is the average value of 9 measured points. Measurement equipment: PR-705 (Φ8mm)

Measuring Conditions:

- Environment: Dark room
- Temperature: $T_a=25^{\circ}\text{C}$
- Operating voltage adjusted for optimum contrast at the center of the display
- Values measured at the center point of the LCD panel after more than 5 minutes of backlight operation

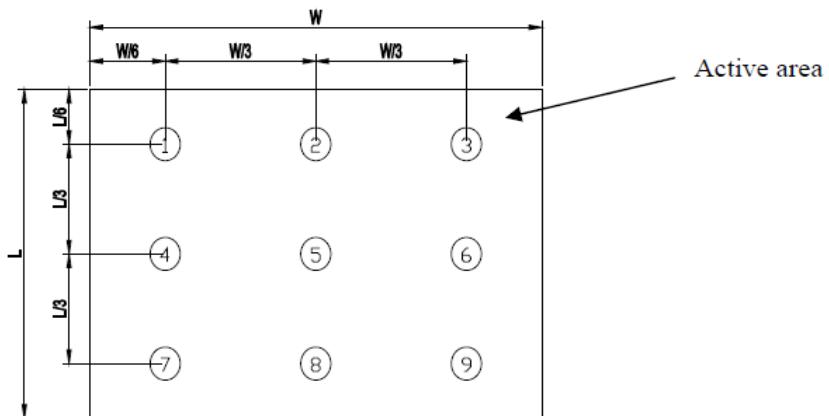

Figure 3 - Measurement Setup

2. The luminance uniformity is calculated using the following formula:

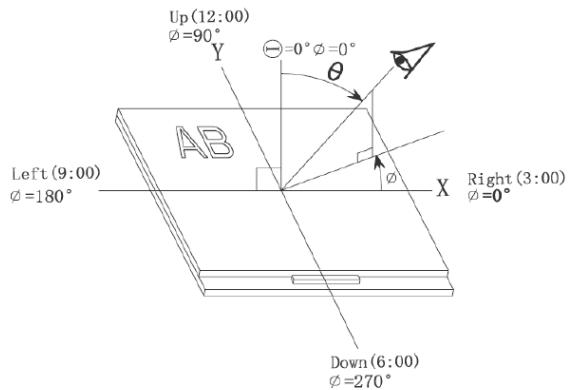
$$\Delta B_p = \frac{B_p \text{ (Min.)}}{B_p \text{ (Max.)}} \times 100\%$$

$B_p \text{ (Max.)}$ = Maximum brightness in 9 measured spots

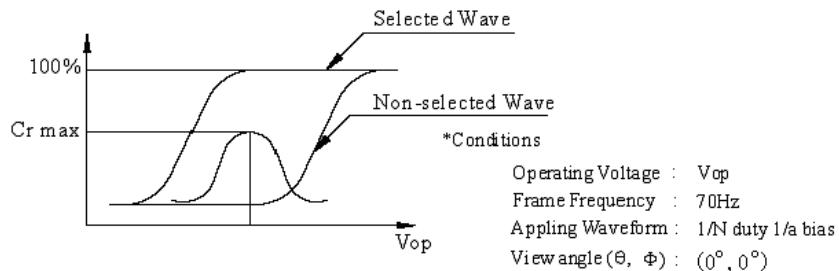
$B_p \text{ (Min.)}$ = Minimum brightness in 9 measured spots


Figure 4 - Measurement Point

3. Definition of viewing angle: Refer to the figure below, indicated by θ and ϕ .


Figure 5 - Viewing Angle

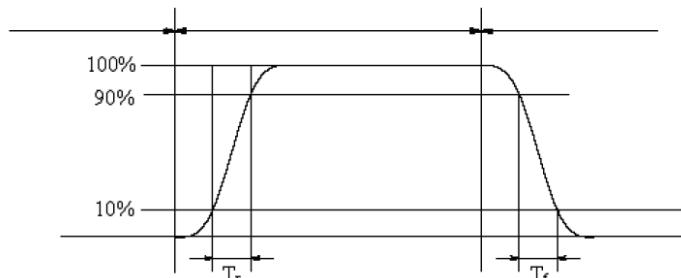
4. Definition of Contrast ratio. (Test equipment: DMS501)


Figure 6 - Contrast Ratio

$$\text{Contrast ratio, } Cr = \frac{\text{Brightness of selected dots}}{\text{Brightness of non-selected dots}}$$

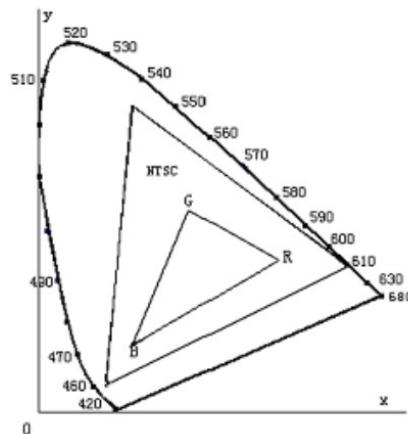
5. Definition of response time. (Test equipment: DMS501)

The output signals of the photo detector are measured when the input signal changes from "black" to "white" (falling time) and from "white" to "black" (rising time). Response time is defined as the time interval between 10% and 90% of the signal amplitude. Refer to the figure below for illustration.


Figure 7 - Definition of Response Time

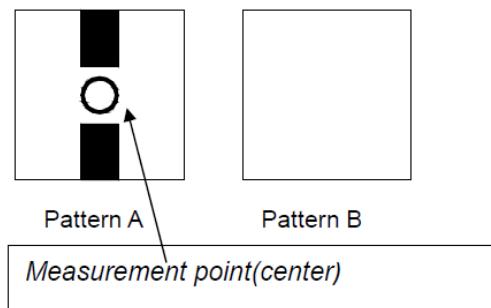
6. Definition of color in terms of CIE coordinates and NTSC ratio.

$$\text{Color gamut: } S = \frac{\text{Area of RGB triangle}}{\text{Area of NTSC triangle}} \times 100\%$$


Figure 8 - 1931 CIE Chromaticity Diagram

7. Definition of cross talk.

$$\text{Cross talk ratio}(\%) = \frac{|\text{Pattern A Brightness} - \text{Pattern B Brightness}|}{\text{Pattern A Brightness}} \times 100\%$$

Electric volume value=3F+/-3Hex**Figure 9 - Definition of Cross Talk**

6 Reliability Test Items

Test Item	Test Conditions	Criterion
High Temperature Storage	Temperature: $+80^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration: 96hrs Restoration: 2hrs at 25°C Power Status: OFF	1. No cosmetic or electrical defects shall be observed after testing.
Low Temperature Storage	Temperature: $-30^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration: 96hrs Restoration: 2hrs at 25°C Power Status: OFF	2. Total current consumption shall not exceed twice the initial value.
High Temperature Operation	Temperature: $+70^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration: 96hrs Restoration: 2hrs at 25°C Power Status: ON	
Low Temperature Operation	Temperature: $-20^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Duration: 96hrs Restoration: 4hrs at 25°C Power Status: ON	
High Temperature and Humidity Operation	Temperature: $+60^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Humidity: 90% RH Duration: 96hrs Power Status: ON	
Temperature Cycle	Range: $-30^{\circ}\text{C} \sim +80^{\circ}\text{C}$ Cycle: 5 cycles Dwell: 30 min at each extreme Transfer Time: 5 min Restoration: 2hrs at 25°C Power Status: OFF	
Vibration Test	Frequency: 10Hz ~ 150Hz Acceleration: 100m/s^2 Duration: 120min	Cosmetic and electrical defects are not permitted
Shock Test	Waveform: Half-sine wave Acceleration: 300m/s^2 Duration: 11ms	

Table 10 - Reliability Test Items

Note:

The inspection criteria after reliability testing are as follows:

Item	Inspection
Contrast	$\text{CR} > 50\%$
I_{DD}	$I_{DD} < 200\%$
Brightness	Brightness $> 60\%$
Color Tone	Color Tone ± 0.05

7 Dimension

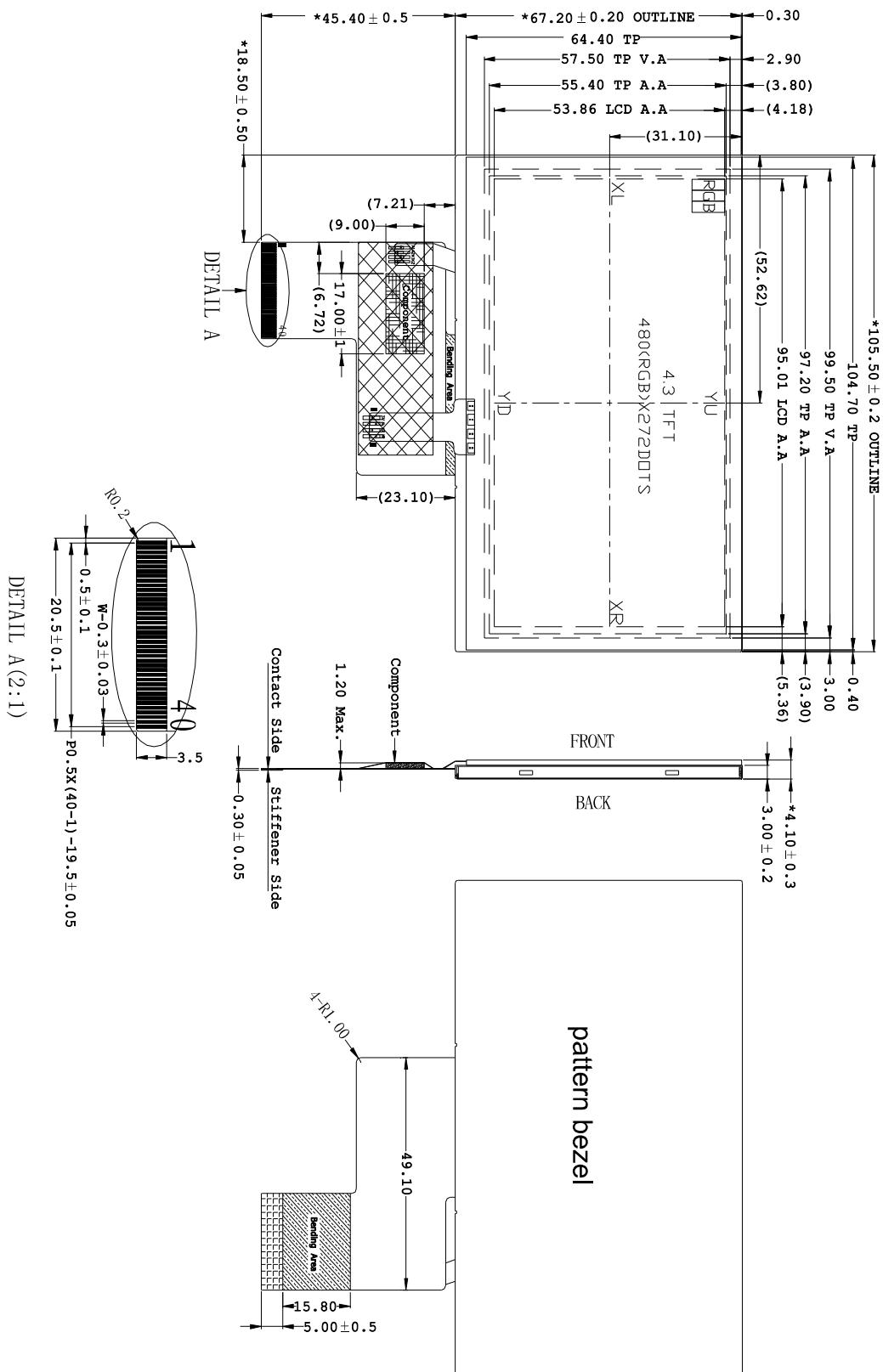


Figure 10 - LCM Dimension

8 Disclaimer Notice: Use of Third-Party Software or Websites

We may recommend use of software or web sites that are owned or operated by other companies. We offer or facilitate this recommendation by hyperlinks or other methods to aid your access to the third-party resource. While we endeavour to direct you to helpful, trustworthy resources, we cannot endorse, approve, or guarantee software, information, products, or services provided by or at a third-party resource or track changes in the resource. Thus, we are not responsible for the content or accuracy of any third-party resource or for any loss or damage of any sort resulting from the use of, or for any failure of, products or services provided at or from a third party resource.

We recommend these resources on an "as is" basis. When you use a third party resource, you will be subject to its terms and licenses and no longer be protected by our privacy policy or security practices, which may differ from the third policy or practices or other terms. You should familiarize yourself with any license or use terms of, and the privacy policy and security practices of, the third party resource, which will govern your use of that resource.

9 Warranty Statement

According to our after-sales policy, the warranty (if applicable) will be void under the following circumstances:

- The device has been damaged due to human factors, such as dropping, impact, water exposure, or unauthorized disassembly/modification.
- The device has malfunctioned due to improper use, mishandling, or usage beyond its intended design.
- The device has been disassembled, repaired, or modified by unauthorized personnel.
- Any other conditions that do not comply with our warranty policy. For details, please [contact our sales team](#).

10 Contact Information

Refer to <https://brtchip.com/contact-us/> for contact information.

Distributor and Sales Representatives

Please visit the [Distribution Network – IC & Module](#) (brtchip.com) page for the contact details of our distributor(s) and sales representative(s) in your country.

System and equipment manufacturers and designers are responsible to ensure that their systems, and any Bridgetek Pte Ltd (BRTChip) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested Bridgetek devices and other materials) is provided for reference only. While Bridgetek has taken care to assure it is accurate, this information is subject to customer confirmation, and Bridgetek disclaims all liability for system designs and for any applications assistance provided by Bridgetek. Use of Bridgetek devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless Bridgetek from any and all damages, claims, suits, or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted, or reproduced in any material or electronic form without the prior written consent of the copyright holder. Bridgetek Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-05, Singapore 536464. Singapore Registered Company Number: 201542387H.

Appendix A – References

Document References

NA

Acronyms and Abbreviations

Terms	Description
FPC	Flexible Printed Circuit
IC	Integrated Circuit
I2C	Inter-Integrated Circuit
LCD	Liquid Crystal Display
LCM	Liquid Crystal Module
LED	Light Emitting Diode
LEDA	Light Emitting Diode Anode
LEDK	Light Emitting Diode Cathode
RTP	Resistive Touch Panel
TFT	Thin Film Transistor

Appendix B – List of Tables & Figures

List of Tables

Table 1 - Part Number/Ordering Information	2
Table 2 - General Specifications	5
Table 3 - TFT-LCD Interface Pin Definition	7
Table 4 - Electrical Absolute Maximum Ratings	8
Table 5 - Environmental Absolute Maximum Ratings	8
Table 6 - Electrical Characteristics	8
Table 7 - LED Backlight Specification	9
Table 8 - Parallel RGB Input Timing	10
Table 9 - Optical Specifications	10
Table 10 - Reliability Test Items	14

List of Figures

Figure 1 - Forward Current vs Ambient Temperature	9
Figure 2 - Backlight LED Circuit	9
Figure 3 - Measurement Setup	11
Figure 4 - Measurement Point	11
Figure 5 - Viewing Angle	11
Figure 6 - Contrast Ratio	12
Figure 7 - Definition of Response Time	12
Figure 8 - 1931 CIE Chromaticity Diagram	12
Figure 9 - Definition of Cross Talk	13
Figure 10 - LCM Dimension	15

Appendix C – Revision History

Document Title: DP-0431-11A Datasheet
Document Reference No.: BRT_000501
Clearance No.: BRT#
Product Page: <https://brtchip.com/product-category/products/>
Document Feedback: [Send Feedback](#)

Revision	Changes	Date
Version 1.0	Initial Release	07-11-2025