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LCD Module Technical Specification

Type No. **T-51756D121J-FW-A-AA**

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1. APPLICATION

This specification applies to color TFT-LCD module, T-51756D121J-FW-A-AA.

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OPTREX classifies the usage of the TFT-LCD module as follows. Please confirm the usage before using the product.

(1) Standard Usage

Computers, office equipment, factory automation equipment, test and measurement equipment, communications, transportation equipment(automobiles, ships, trains, etc.), provided, however, that operation is not influenced by TFT-LCD directly.

(2) Special Usage

Medical equipment, safety equipment, transportation equipment, provided, however, that TFT-LCD is necessary to its operation.

(3) Specific Usage

Cockpit Equipment, military systems, aerospace equipment, nuclear reactor control systems, life support systems and any other equipment. OPTREX should make a contract that stipulate apportionment of responsibilities between OPTREX and our customer.

The product specified in this document is designed for “Standard Usage” unless otherwise specified in this document. If customers intend to use the product for applications other than those specified for “Standard Usage”, they should contact OPTREX sales representative in advance.

OPTREX has been making continuous effort to improve the reliability of its products. Customers should implement sufficient reliability design of their application equipments such as redundant system design, fail-safe functions, anti-failure features.

OPTREX assumes no responsibility for any damage resulting from the use of the product that does not comply with the instructions and the precautions specified in this document.

Please contact and consult a OPTREX sales representative for any questions regarding this product.

2. OVERVIEW

T-51756D121J-FW-A-AA is 12.1" color TFT-LCD (Thin Film Transistor Liquid Crystal Display) module composed of LCD panel, driver ICs, control circuit, and backlight unit.

By applying 6 bit digital data, 1024 × 768, 260 K-color images are displayed on the 12.1" diagonal screen. Input power voltage is single 3.3V for LCD driving.
The type of data and control signals are digital and transmitted via LVDS interface per Typ. 65 MHz clock cycle.

Inverter for backlight is not included in this module. General specifications are summarized in the following table:

ITEM	SPECIFICATION
Display Area (mm)	245.76(H) × 184.32(V) (12.106-inch diagonal)
Number of Dots	1024 × 3 (H) × 768 (V)
Pixel Pitch (mm)	0.240 (H) × 0.240 (V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white TN
Number of Color	260 K
Brightness (cd/m^2)	320
Wide Viewing Angle Technology	Optical Compensation Film
Viewing Angle (CR ≥ 10)	-65~65° (H) -75~45° (V)
Surface Treatment	Antiglare and hard-coating 3H
Electrical Interface	LVDS
Optimum Viewing Angle(Contrast ratio)	6 o'clock
Module Size (mm)	280.0 (W) × 210.0 (H) × 12.0 (D)
Module Mass (g)	720
Backlight Unit	CCFL, 2-tubes, edge-light, replaceable

Characteristic value without any note is typical value.

3. ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX	UNIT
Power Supply Voltage for LCD	VCC	0	4.0	V
Logic Input Voltage	VI	-0.3	VCC+0.3	V
Lamp Voltage	VL	0	2000	Vrms
Lamp Current	IL	0	18	mArms
Lamp Frequency	FL	--	80	kHz
Operation Temperature(Panel) Note 1,2)	$T_{op(Panel)}$	-20	70	°C
Operation Temperature(Ambient) Note 2)	$T_{op(Ambient)}$	-20	70	°C
Storage Temperature Note 2)	T_{stg}	-20	80	°C

[Note]

1) Measured at the center of active area and at the center of panel back surface

2) Top,Tstg ≤ 40°C : 90%RH max. without condensation

Top,Tstg > 40°C : Absolute humidity shall be less than the value of 90%RH at 40°C without condensation.

4. ELECTRICAL CHARACTERISTICS

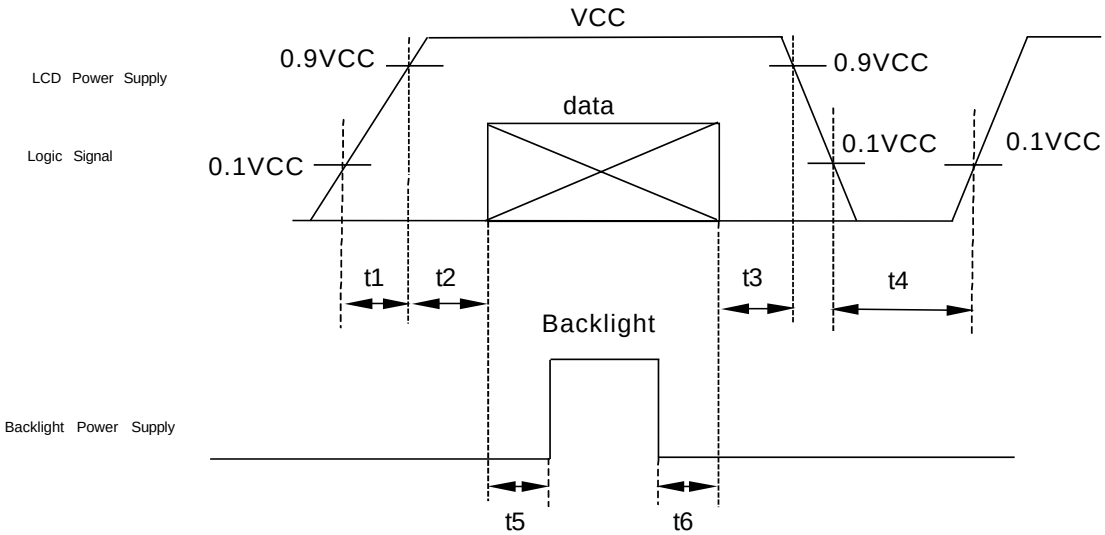
(1) TFT-LCD

Ambient temperature: Ta = 25℃

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	Remarks
Power Supply Voltages for LCD	VCC	3.0	3.3	3.6	V	*1)
Power Supply Currents for LCD	ICC	--	470	820	mA	* 2)
Permissive input ripple Voltage	VRP	--	--	100	mVp-p	VCC=+3.3V

*1) Power and signals sequence:

t1 ≤ 10ms	400ms ≤ t4
0 < t2 ≤ 50ms	400ms ≤ t5
0 < t3 ≤ 50ms	0 ≤ t6



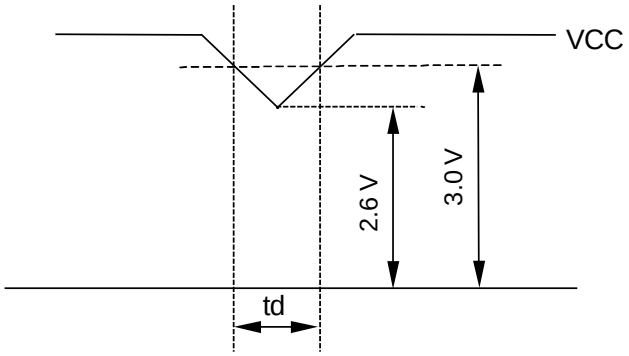
data: RGB DATA, DCLK, HD, VD, DENA

VCC-dip conditions:

1) When 2.6 V ≤ VCC < 3.0 V, td ≤ 10 ms

2) When VCC < 2.6 V

VCC-dip conditions should also follow the power and signals sequence.



*2) Typical current condition:

64-gray-bar pattern

768 line mode

VCC = +3.3 V, , f_H = 48.4 kHz, f_V = 60 Hz, f_{CLK} = 65 MHz

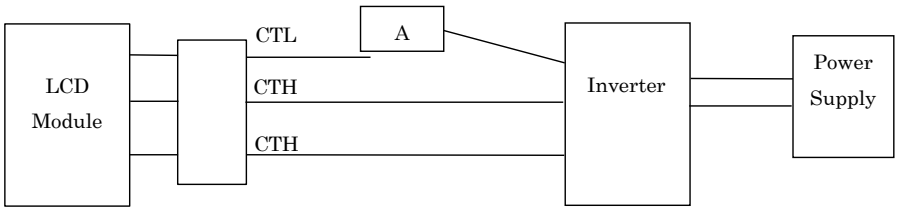
(2) Backlight

Ta = 25℃

ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	Remarks
Lamp Voltage	VL	--	540	--	Vrms	IL = 12.0 mArms
Lamp Current	IL	6.0	12.0	13.0	mArms	*1),*5)
Lamp Frequency	FL	30	--	60	kHz	* 2)
Starting Lamp Voltage	VS	1000	--	--	Vrms	Ta = 25°C
		1200	--	--		Ta = 0°C
		1290	--	--		Ta = –20°C
Lamp Life Time	LT	50,000	--	--	h	* 3), *4)IL = 12.0mArms, Continuous operation

[Note]

*1) Lamp Current measurement method (The current meter is inserted in low voltage line.)



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