

TENTATIVE

**All information in this technical data sheet is tentative
and subject to change without notice.**

8.4"VGA

TECHNICAL SPECIFICATION

COMPANY PROPRIETARY
NOT TO BE REPRODUCED OR DISCLOSED WITHOUT SPECIFIC
WRITTEN PERMISSION OF MITSUBISHI ELECTRIC CORPORATION
(THIS IS A RED INK STAMP)

T-55399D084J-FW-A-ABN

OPTREX CORPORATION.

Date: May.23,'08

CONTENTS

No.	Item	Page
--	COVER	1
--	CONTENTS	2
.1	APPLICATION	3
2	OVERVIEW	4
3	ABSOLUTE MAXIMUM RATINGS	5
4	ELECTRICAL CHARACTERISTICS	5, 6, 7
5	INTERFACE PIN CONNECTION	8
6	INTERFACE TIMING	9, 10, 11, 12
7	BLOCK DIAGRAM	13
8	MECHANICAL SPECIFICATION	14, 15
9	OPTICAL CHARACTERISTICS	16, 17, 18
10	RELIABILITY TEST CONDITION	19
11	OTHER FEATURE	20
12	HANDLING PRECAUTIONS FOR TFT-LCD MODULE	21, 22, 23

1. APPLICATION

This specification applies to color TFT-LCD module, AA084VF01.

These specification papers are the proprietary product of OPTREX CORPORATION ("OPTREX") and include materials protected under copyright of OPTREX. No part of this document may be reproduced in any form or by any means without the express written permission of OPTREX.

OPTREX does not assume any liability for infringement of patents, copyrights or other intellectual property rights of third parties by or arising from use of a product specified in this document. No license, express, implied or otherwise, is granted under any patents, copyrights or other intellectual property rights of OPTREX or of others.

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 first contact OPTREX sales representative for it's intended use in writing.

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

AA084VF01 is 8.4" 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, 640 × 480, 262k-color images are displayed on the 8.4" diagonal screen. Input power voltage is 3.3 V for LCD driving.

The type of data and control signals are digital and transmitted via CMOS interface per Typ. 25 MHz clock cycle.

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

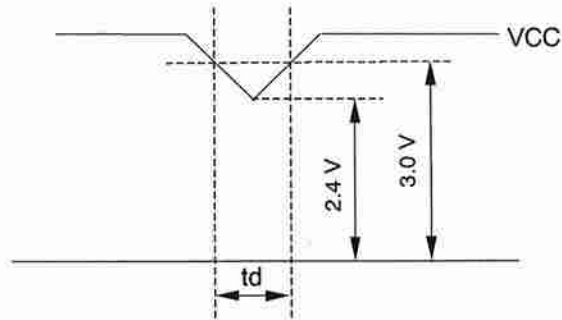
ITEM	SPECIFICATION
Display Area (mm)	170.9(H) × 128.2 (V) (8.4-inch diagonal)
Number of Dots	640 × 3 (H) × 480 (V)
Pixel Pitch (mm)	0.267 (H) × 0.267 (V)
Color Pixel Arrangement	RGB vertical stripe
Display Mode	Normally white TN
Number of Color	262k
Luminance (cd/m ²)	480
Wide Viewing Angle Technology	Optical Compensation Film
Viewing Angle (CR ≥ 10)	-80~80°(H) -60~80°(V)
Surface Treatment	Anti-glare and hard-coating 3H
Electrical Interface	CMOS
Optimum Viewing Angle (Contrast ratio)	6 o'clock
Module Size (mm)	199.5 (W) × 149.0 (H) × 11.5 (D)
Module Mass (g)	350
Backlight Unit	CCFL, 2-tubes, edge-light, replaceable

Characteristic value without any note is typical value.

VCC-dip conditions:

- 1) When $2.4\text{ V} \leq \text{VCC} < 3.0\text{ V}$, $t_d \leq 10\text{ ms}$
- 2) When $\text{VCC} < 2.4\text{ V}$

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



*2) $\text{VCC} = +3.3\text{ V}$, $f_H = 31.5\text{ kHz}$, $f_V = 60\text{ Hz}$, $f_{\text{CLK}} = 25\text{ MHz}$

Display image at typical power supply current value is 64-gray-bar pattern (6 bit), 480 line mode.

*3) Fuse

Parameter	Fuse Type Name	Supplier	Remark
VCC	FCC16162AB	Kamaya Electric Co., Ltd.	*)

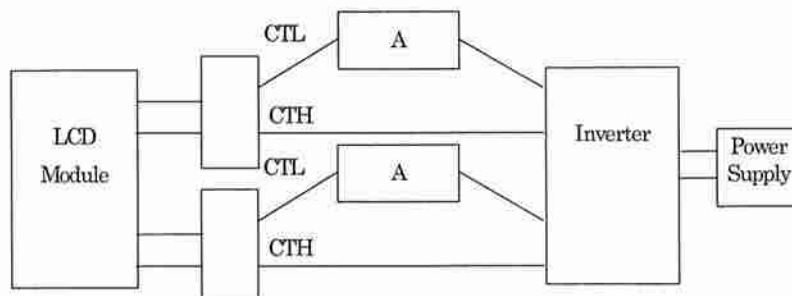
*) The power supply capacity should be designed to be more than the fusing current.

(2) Backlight

$T_a = 25^\circ\text{C}$

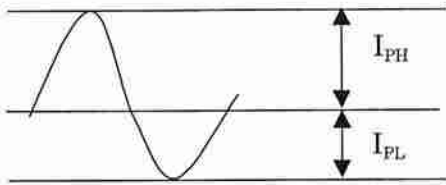
ITEM	SYMBOL	MIN.	TYP.	MAX.	UNIT	Remarks
Lamp Voltage	VL	--	400	--	Vrms	$I_L = 6.5\text{ mArms}$
Lamp Current	IL	3.0	6.5	7.5	mArms	*1), *5)
Lamp Frequency	FL	30	--	70	kHz	*2)
Starting Lamp Voltage	VS	850	--	--	Vrms	$T_a = 25^\circ\text{C}$
		1190	--	--	Vrms	$T_a = 0^\circ\text{C}$
		1450	--	--	Vrms	$T_a = -30^\circ\text{C}$
Lamp Life Time	LT	50000	--	--	h	*3), *4) $I_L = 6.5\text{ mArms}$, Continuous Operation

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



*2) Lamp frequency of inverter may produce interference with horizontal synchronous frequency, and this may cause horizontal beat on the display. Therefore, please adjust lamp frequency, and keep inverter as far from module as possible or use electronic shielding between inverter and module to avoid the interference.

- *3) Lamp life time is defined as the time either when the brightness becomes 50% of the initial value, or when the starting lamp voltage does not meet the value specified in this table.
- *4) The life time of the backlight depends on the ambient temperature. The life time will decrease under low/high temperature.
- *5) Please use the inverter which has symmetrical current wave form as follows,
 The degree of unbalance: less than 10%
 The ratio of wave height: less than $\sqrt{2} \pm 10\%$



I_{PH} : High side peak
 I_{PL} : Low side peak

The degree of unbalance = $|I_{PH} - I_{PL}| / I_{rms} \times 100(\%)$
 The ratio of wave height = $I_{PH}(\text{or } I_{PL}) / I_{rms}$

CURRENT WAVE FORM