

## Industrial Solutions Flatpanel Technology

### DESIGN FOR TFT COLOR LCD MODULE

Design No.	doh308_420
Revision	Rev. 1.0
Type	42" 1920x1080
Specification	
Version	Internal Revision 0.1
Date	05.08.2010
Preliminary <input checked="" type="checkbox"/>	
Final <input type="checkbox"/>	

**This typical design can be used to manufacture dedicated products at i-sft according to the mentioned specification. Please send us a RFQ for this design and stating the number of displays to be build. We will send a formal quote including a final specification. With your formal order please also send a written approval of the final specification. No further activities will start before formal order is processed and written approval of final specification is in!**



Revision	Date	Description
1.0	TBD	First Draft

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## 1 DESCRIPTION

**i-sft doh308\_420** is a colour active matrix TFT (Thin Film Transistor) liquid crystal display (LCD) that uses silicon TFT as switching devices.  
This model is composed of a TFT LCD panel, a driver circuit and a backlight system.

## 2 FEATURES

- High brightness TBD cd/m<sup>2</sup>
- Extended temperature range
- Integrated inverter for driving backlight
- High contrast ratio, high aperture structure

## 3 APPLICATIONS

- Point of Information / Point of Sales
- Monitors for industrial use

## 4 STRUCTURE AND FUNCTIONS

A TFT colour LCD module comprises a TFT LCD panel and LSIs for driving the liquid crystal. The TFT LCD panel is composed of a TFT array glass substrate superimposed on a colour filter glass substrate with liquid crystal filled in the narrow gap between two substrates.

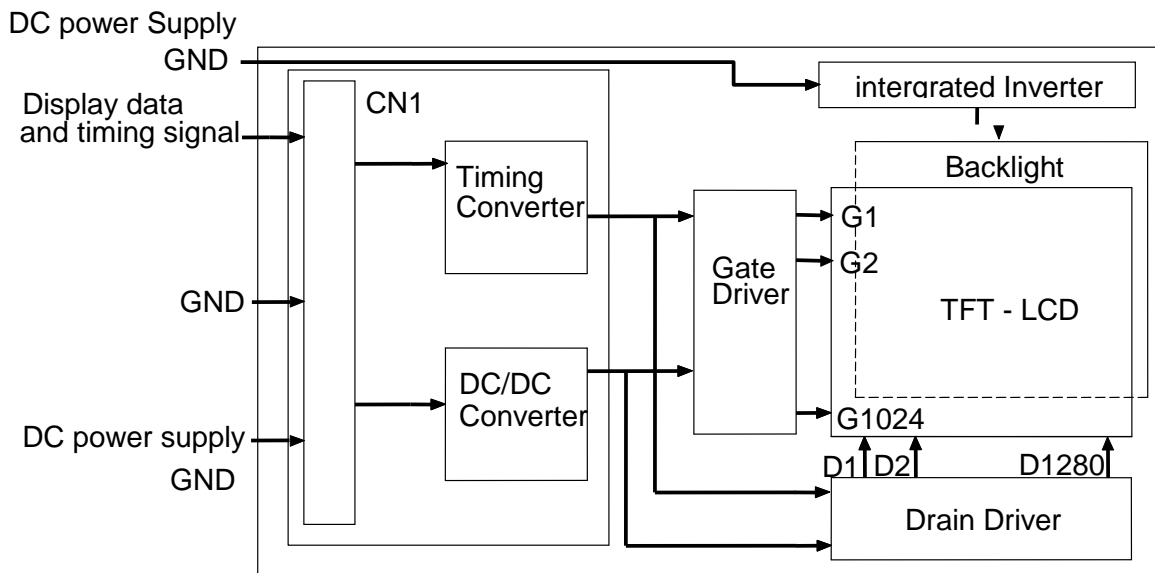
RGB (Red, Green, Blue) data signals are sent through a signal processor to the LCD panel drivers after modulation into suitable forms for active matrix addressing.

Each of the liquid crystal cells acts as an electro-optical switch that controls the incident light transmission. The liquid crystal cell is driven by a signal applied to the TFT switch.

## 5 OUTLINE OF CHARACTERISTICS

ITEM	SPECIFICATION	UNIT	NOTE
Active Display area	42 inch diagonal	mm	
Driver element	a – Si TFT active matrix		
Display colours	16.2M		
Number of pixels	1920 x 1080	pixel	
Luminance (typ.)	TBD	cd/m <sup>2</sup>	
Dimming ratio	TBD		
Pixel arrangement	TBD		
Pixel pitch	TBD	mm	
Display Mode	TBD		
Surface treatment	TBD		

## 6 BLOCK DIAGRAM



## 7 SPECIFICATIONS

### 7-1 GENERAL SPECIFICATIONS

ITEM		TYP.	UNIT
Module size	Horizontal (H)	tbd	mm
	Vertical (V)	tbd	mm
	Depth (D)	tbd	mm
Weight		Tbd	g

### 7-2 ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	MIN.	MAX.	UNIT	NOTE
Storage temperature	$T_{STG}$	tbd	tbd	°C	
Operating temperature (Surface of Glass)	$T_{OPR}$	tbd	tbd	°C	
Shock (operating)	$S_{nop}$	tbd	tbd	g	
Vibration (operating)	$V_{nop}$	tbd	tbd	g	

### 7-3 ELECTRICAL ABSOLUTE RATINGS

#### TFT LCD MODULE

ITEM	SYMBOL	MIN.	MAX.	UNIT	NOTE
Power Supply Voltage for logic	VDD	tbd	tbd	V	(1)
Input signal Voltage for logic	VI	tbd	tbd	V	(1)

#### Notes

- (1) Permanent damage may occur to the LCD module if beyond this specification.  
 Functional operation should be restricted to the conditions described under Normal Operating Conditions.

### 7-4 DEFECT SPECIFICATIONS

#### a) Inspection conditions

Distance : the distance between the inspector's eye and the LCD panel is 20cm.

Luminance : the distance between a 20-W fluorescent lamp and the LCD panel is 25-30 cm.

Temperature: Room temperature is  $25\text{C}^{\circ} \pm 5\text{C}^{\circ}$ .

Viewing angle:

Display specifications :  $-20^{\circ} \leq \theta x \leq +20^{\circ}$ ,  $0^{\circ} \leq \theta y \leq +20^{\circ}$

Appearance specifications:  $-45^{\circ} \leq \theta x \leq +45^{\circ}$ ,  $-45^{\circ} \leq \theta y \leq +45^{\circ}$

Measuring light conditions: for Cold Cathode Fluorescent Lamp

Chromaticity coordinates (x = 0.320, y = 0.325) typ.

Luminance of backlight surface for inspection: 1200 cd/m<sup>2</sup>

b) Display specifications

Item	Specifications			
Line defect	Not allowed			
Luminous dots *1	Color	Brightness	Distance between same color dots	Quantity
	Red, Green	F + H	-	$R + G \leq 6$
		F	-	$R \leq 6, G \leq 3$
	Blue	F + H	-	$\leq 6$
		F	-	$\leq 6$
	Red, Green, Blue	F	$\leq 6.5 \text{ mm}$ *4	$R, G, B \leq 0$
Linked two or *3 more dots			$R, G, B \leq 0$	
Dark dots *2	Color	Distance between dark dots		Quantity
	Black	-		$R + G + B \leq 16$ $R, G, B \leq 7$
		Linked two dots	*3	$\leq 1 \text{ pair}$
		Linked three or more dots	*3	$\leq 0$
		$\leq 6.5 \text{ mm}$	*4	$\leq 0$

\*1 F: Full luminous dots (Bright point independent of viewing angle)

H: Half luminous dots (Bright point dependent on viewing angle)

Luminous dots are measured while the screen is black.

\*2 Dark dots are measured while the screen is illuminated with Red, Green, or Blue.

\*3 Linkage means linked two or more dots.

■ ( : Luminous or Dark dot)

To be counted

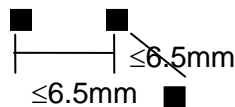


To be uncounted



\*4  $\leq 6.5 \text{ mm}$  is considered with:

■ ( : Luminous or Dark dot)



	To be counted	To be uncounted
Luminous dots	Same color	Different color
Dark dots	Same screen	Different screen

\*5 The dot-amounts of linkage and  $<6.5 \text{ mm}$  are counted when the dots are only full luminous.



## c) Appearance specifications

Item	Specifications		Quantity
	Measurement criteria		
Other objects Stains Dust (dot shape)	Average diameter( $\varnothing$ ) mm		Allowed value
	$\varnothing \leq 0.2$		all allowed
	$0.2 < \varnothing < 0.3$		$\leq 10$ points
	$0.3 < \varnothing \leq 0.5$		$\leq 3$ points
	$0.5 < \varnothing$		0 point
Linked other objects			
Other objects Stains Dust (line shape)	Width(W) mm	Length(L) mm	all allowed
	$W \leq 0.05$	-	
	$0.05 \leq W \leq 0.1$	$L < 0.7$	$\leq 4$ points
		$0.7 \leq L \leq 1.0$	0 point
	$0.1 < W$	-	
Polarizer Bubbles	Average diameter( $\varnothing$ ) mm		
Wrinkles Dent	$\varnothing \leq 0.5$		< 2 points
Panel dent	$\varnothing \leq 0.5$		< 2 points
Polarizer scratch	Remarkable scratches		0 point
Form	Specified labels and parts are put		

The relevant data for the values above are only valid under the conditions described in 7-9 "a".