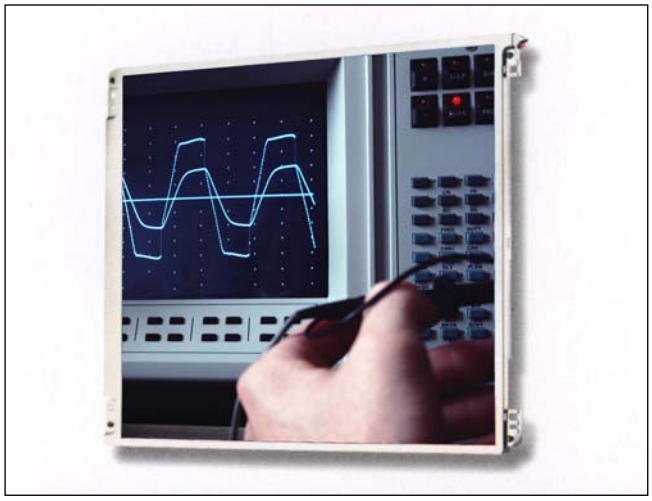
AND Displays



AND10C401S-DHB

10.4" SVGA Color TFT LCD Module

Features

- High luminance
- Dual CCFL backlight
- Low reflection
- Clear 262K colors
- Thin and lightweight design
- 3.3Volt LVDS Operation
- SVGA (800 x 600 pixels color display)
- Fast response time
- Applications: Display Terminals, Scientific Instruments, Medical Instruments, Test and Measurement Instruments, Process Control/Factory Automation Equipment, Office Automation Equipment

Mechanical Specifications

Item	Specification	Unit
Outline Dimension	243 (W) x 185.1 (H) x 11 (typ.) (D)	mm
Number of Pixels	800 (W) x 600 (H)	pixels
Display Colors	262, 144	–
Active Area	211.2 (W) x 158.4 (H)	mm
Pixel Pitch	0.264 (W) x 0.264 (H)	–
Pixel Configuration	Stripe	gram
Weight (appox.)	480 (typ.)	gram
Backlight	CCFL, 2 tubes	–
Surface Treatment	Anti-glare and hard-coating	–
Display mode	Normally white	–

Absolute Maximum Ratings

Item	Sym.	Min	Max	Unit
Supply Voltage	V_{DD}	-0.3	+4.0	V
Input Signal Voltage (note 1)	V_{IN}	-0.3	V_{DD}+0.3	V
Backlight Driving Voltage	V_L	–	2000	V
Backlight Driving Frequency	F_L	0	100	kHz
StorageTemperature (note 2)	T_{ST}	-20	+60	°C
Operating Temperature	T_{OP}	0	+50	°C

Note 1: LVDS signal
Note 2: Humidity: 80% RH Max. at Ta ≤ 40°C
Maximum wet-bulb temperature is at 39°C or less at Ta ≤ 40°C and no condensation.

Product specifications contained herein may be changed without prior notice. It is therefore advisable to contact Purdy Electronics before proceeding with the design of equipment incorporating this product.

Electrical Specifications (Ta = 25°C)

Item	Sym.	Min	Typ	Max	Unit
Supply Voltage	V_{DD}	3.0	3.3	3.6	V
Current Disspation	I_{DD}	–	350	450	mA
LVDS Diff. input high threshhold	V_{TH}	–	–	100	mV
LVDS Diff. input low threshold	V_{TL}	-100	–	–	–
Lamp Current	I_{FL}	6.0	14.0	16.0	mA
Lamp Voltage	V_L	400	550	600	Vrms
Lamp Initial Voltage (at Ta=25°C)	V_{SFL}	–	–	875	Vrms
(at Ta=0°C)		–	–	1300	
Lamp Driving Frequency	F_L	30	55	60	–
Lamp Power Consumption	–	4	8	11	W
Lamp Life Time	–	10000	15000	–	Hrs
LCD Panel Life Time (MTBF)	–	–	50000	–	Hrs

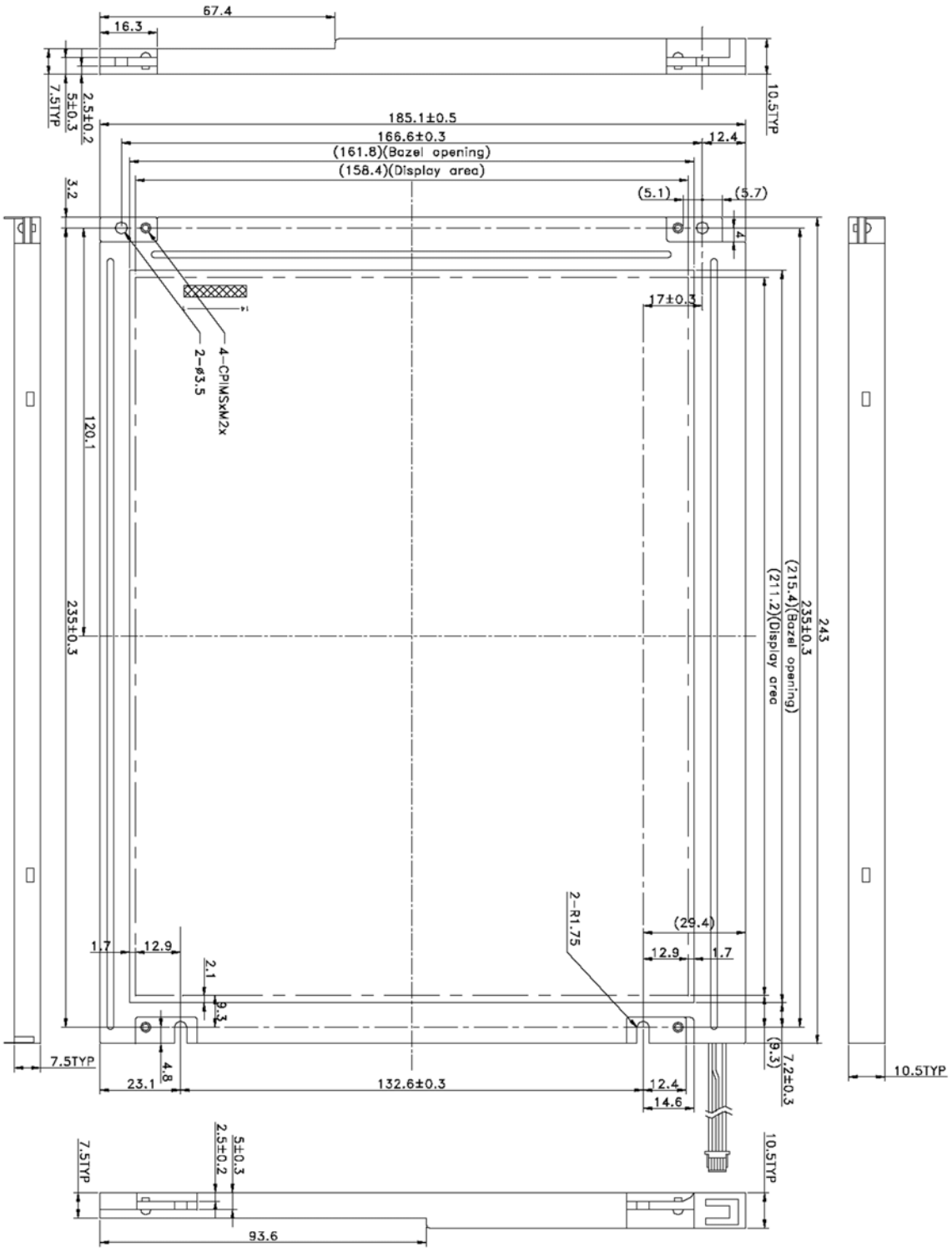
Optical Specifications (Ta = 25°C)

Item		Sym.	Cond.	Min	Typ	Max	Unit
Viewing Angle	H	θ	CR≥10	±55	±60	–	deg
	V	θ (to 12)		50	55	–	deg
		θ (to 6)		35	40	–	deg
Contrast Ratio		CR	Opt Dir	200	400	–	–
Response Time	Rise	Tr	θ = 0° ϕ = 0°	–	15	50	ms
	Fall	Tf		–	25	50	ms
Luminance Lum. Uniformity		L	θ=0°/ϕ=0°	300	350	–	cd/m^2
		U	–	55	80	–	%
White Chromacity		x	–	0.29	0.32	0.35	–
		y	–	0.32	0.35	0.38	–
Cross Talk Ratio		CTK	–	–	–	3.5	%

Dimensional Outline

Front View

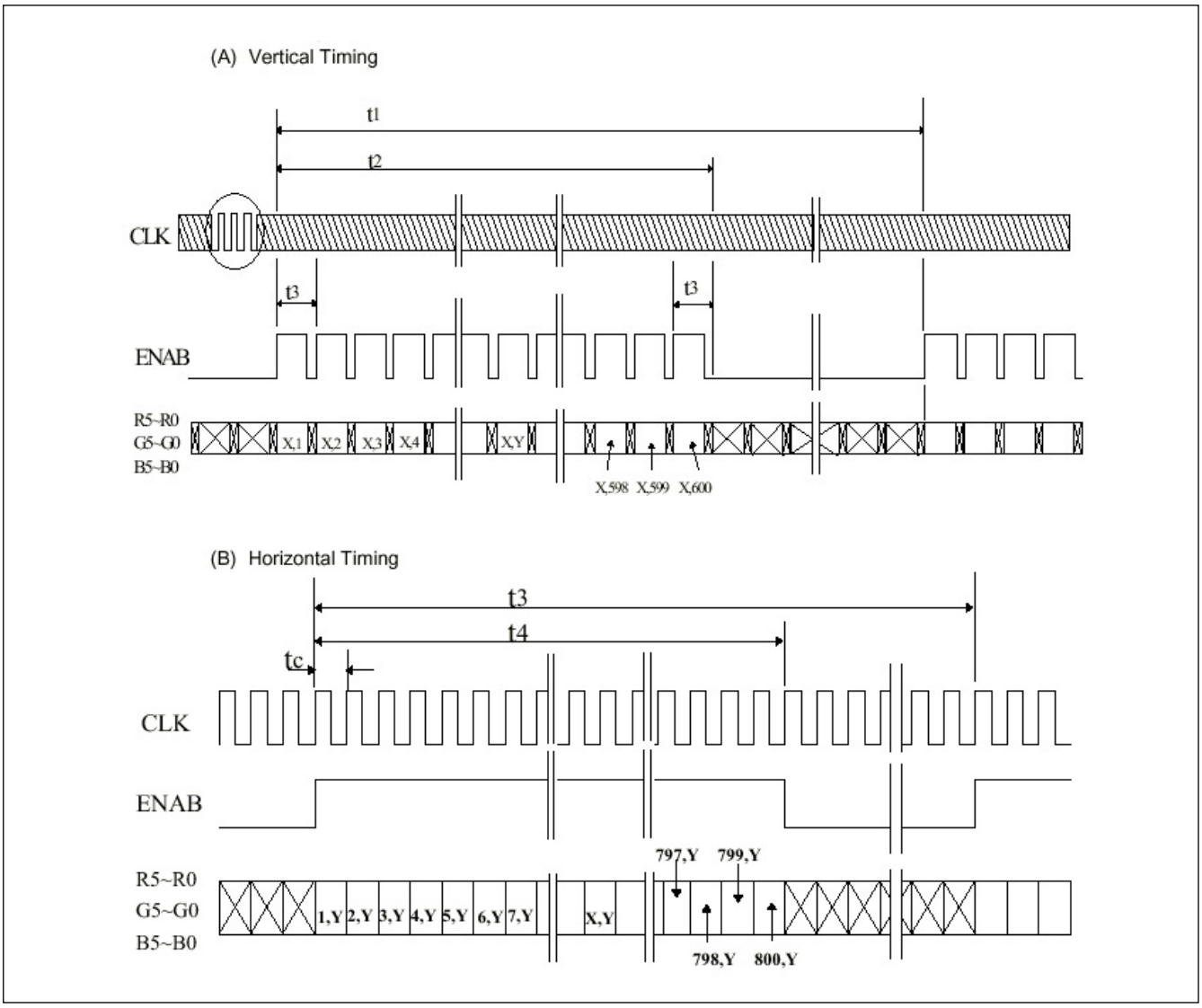
Unit: mm
Standard Tolerance: 0.5mm

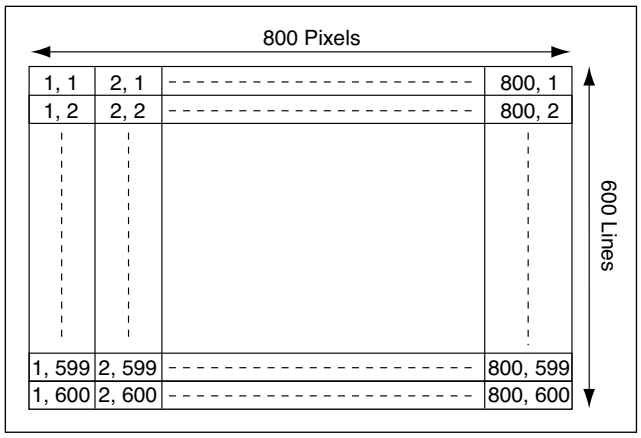


Timing Specifications

Item	Symbol	Minimum	Typical	Maximum	Unit
Frame Cycling	t1	604 x t3	628 x t3	800 x t3	–
		–	16.58	–	ms
Vertical Display Period	t2	600 x t3	600 x t3	600 x t3	–
Horizontal Scanning Time	t3	920 x t5	1056 x t5	1064 x t5	–
		–	26.4	–	us
Horizontal Display Period	t4	800 x t5	800 x t5	800 x t5	–
Clock Cycle	t5	–	25.0	–	ns
Clock High Level Time	t6	9.0	–	–	ns
Clock Low Level Time	t7	9.0	–	–	ns
Hold time	t8	4.0	–	–	ns
Setup time	t9	5.0	–	–	ns

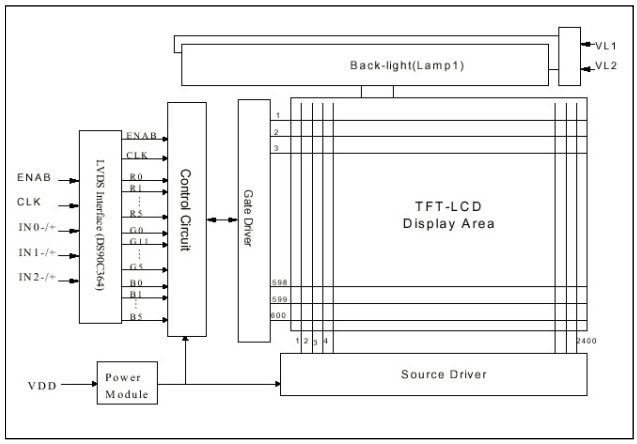
Timing Chart



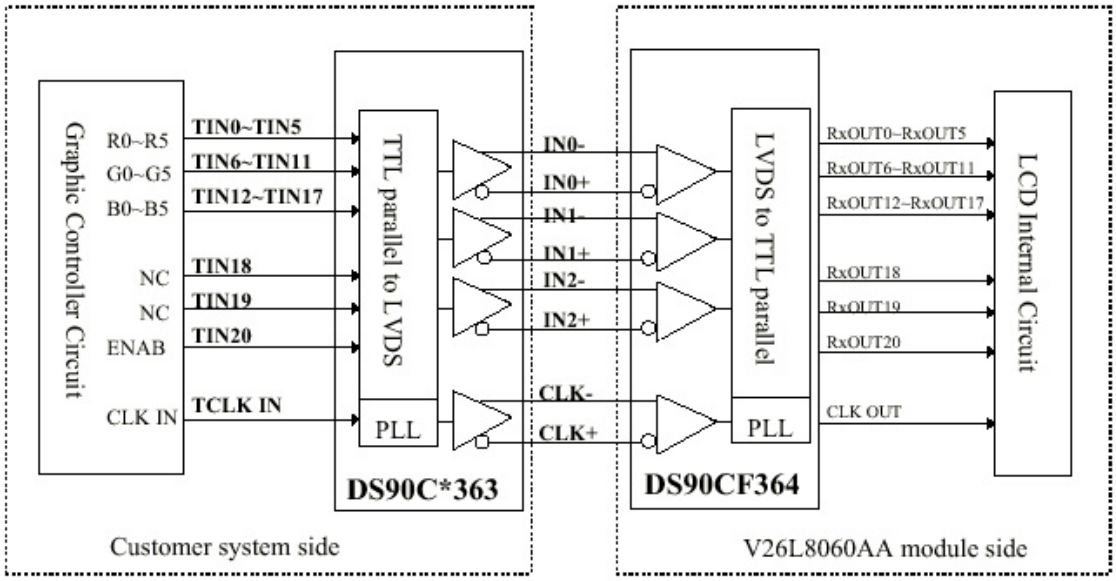


Recommended Inverter: TBD

Block Diagram



LVDS Interface Block Diagram



Connector Pin Assignment for Interface CN1 Input Signal

Molex - 55177-1491

Terminal No.		Symbol	Function
1		VDD	Power Supply: +3.3V
	2	VDD	Power Supply: +3.3V
3		GND	Ground
	4	GND	Ground
5		IN0-	Pixel data Transmission pair 0 (negative -)
	6	IN0+	Pixel data Transmission pair 0 (positive +)
7		IN1-	Pixel data Transmission pair 1 (negative -)
	8	IN1+	Pixel data Transmission pair 1 (positive +)
9		IN2-	Pixel data Transmission pair 2 (negative -)
	10	IN2+	Pixel data Transmission pair 2 (positive +)
11		CLK-	Sampling Clock (negative -)
	12	CLK+	Sampling Clock (positive +)
13		GND	Ground
	14	GND	Ground

CN2 CCFL Power Source

(BHR-02VS-1/Japan Solderless Terminal Mfg Co., Ltd.)

Terminal No.	Symbol	Function
1	VL	CCFL Power Supply (High Voltage)
2	GL	CCFL Power Supply (GND Side)

Note (1): NC terminal is open. (Don't use.)
Note (2): 256 colors are displayed by the combinations of 18 data bits.

Color		Input Color Data																	
		Red						Green						Blue					
		R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0
Basic Color	Black	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
	Green (63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
	Blue (63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1
	Cyan	0	0	0	0	0	0	1	1	1	1	1	1	1	1	1	1	1	1
	Magenta	1	1	1	1	1	1	0	0	0	0	0	0	1	1	1	1	1	1
	Yellow	1	1	1	1	1	1	1	1	1	1	1	1	0	0	0	0	0	0
	White	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Red	Red (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (01)	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red (02)	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Darker	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Brighter	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Red (61)	1	1	1	1	0	1	0	0	0	0	0	0	0	0	0	0	0	0
	Red (62)	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0
	Red (63)	1	1	1	1	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Green	Green (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Green (01)	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
	Green (02)	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
	Darker	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Brighter	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Green (61)	0	0	0	0	0	0	1	1	1	1	0	1	0	0	0	0	0	0
	Green (62)	0	0	0	0	0	0	1	1	1	1	1	0	0	0	0	0	0	0
	Green (63)	0	0	0	0	0	0	1	1	1	1	1	1	0	0	0	0	0	0
Blue	Blue (00)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Blue (01)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
	Blue (02)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0
	Darker	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Brighter	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓
	Blue (61)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	1
	Blue (62)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	0
	Blue (63)	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1	1	1