AND Displays

AND10C401S-HB
10.4" SVGA Color TFT LCD Module

Features
• High luminance
• Single CCFL backlight
• Low reflection
• Clear 256K colors (K=1024)
• 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 Dimensions	238.6 (H) x 171.0 (V) x 6.0 max (D)	mm
Number of Pixels	800 (H) x 600 (V)	pixels
Active Area	211.2 (H) x 158.4 (V)	mm
Pixel Pitch	0.264 (H) x 0.264 (V)	mm
Weight (approx.)	312	gram
Backlight	CCFL, Side-light type	–

Absolute Maximum Ratings

Item	Symbol	Min	Max	Unit
Supply Voltage	V_{DD}	-0.3	4.0	V
	V_{FL}	0	2000	Vrms
FL Driving Frequency	f_{FL}	0	100	kHz
Input Signal Voltage	V_{IN}	-0.3	$V_{DD} + 0.3$	V
Operating Temperature	T_{op}	0	50	°C
Storage Temperature	T_{stg}	-20	60	°C
Humidity (Max. Wet bulb temp = 29°C)	–	10	90	%RH

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.
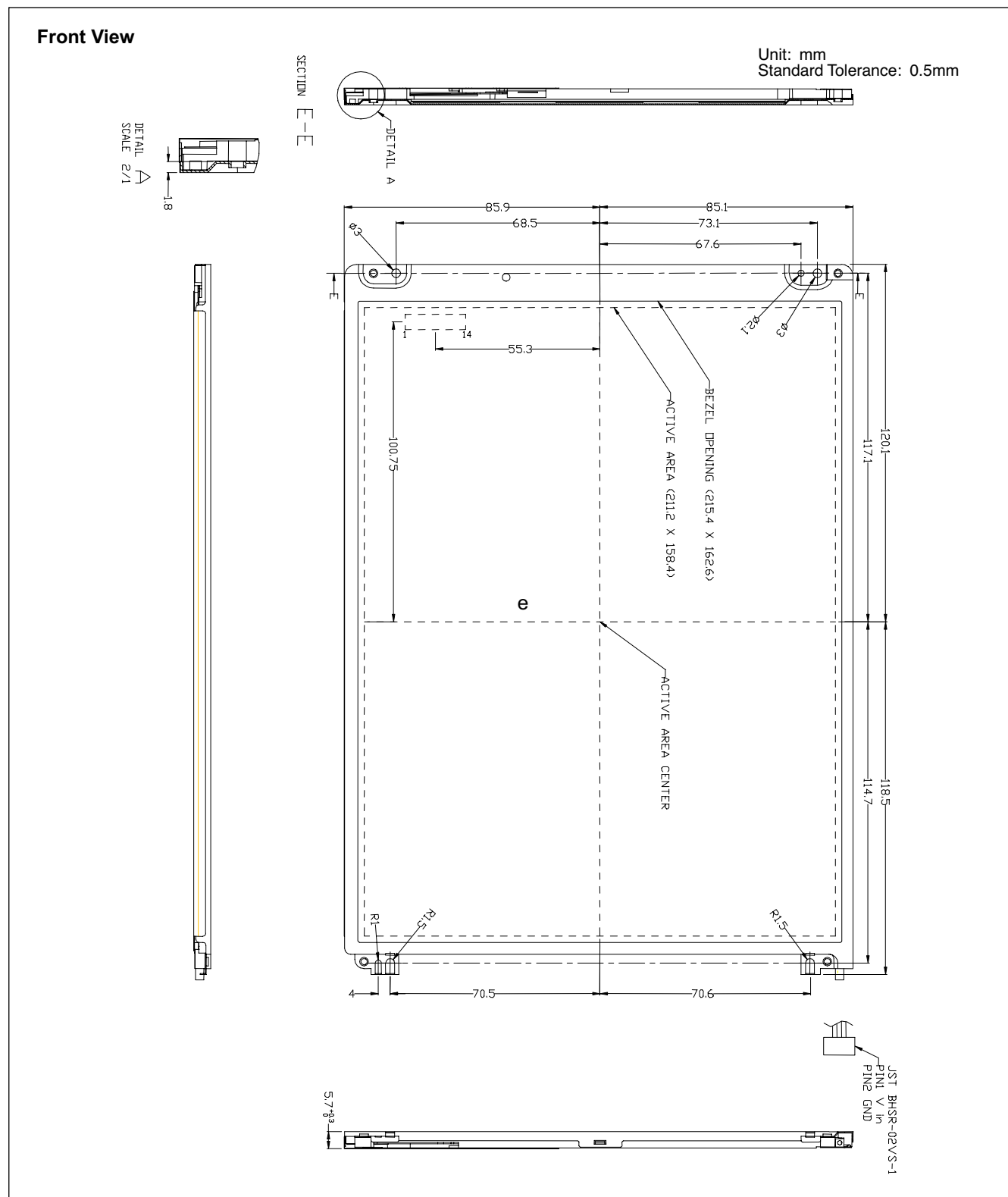
Electrical Specifications (Ta = 25°C)

Item	Symbol	Min	Typ	Max	Unit
Supply Voltage (I_{FL}=6mA)	V_{DD}	3.0	3.3	3.6	V
	V_{FL}	500	550	600	Vrms
FL Start Voltage (Ta = 0°C)	–	1200	–	–	Vrms
High Level Input Voltage	V_{IH}	3.5	–	V_{DD}	V
Low Level Input Voltage	V_{IL}	0	–	1.5	V
LVDS Differential Input High Threshold	–	–	–	100	mV
LVDS Differential Input Low Threshold	–	100	–	–	mV
Current Consumption	I_{DD}	–	370	–	mA
	I_{FL}	2.0	3.0	6.0	mArms
Power Consumption (*1)	P	–	2.9	4.5	W

*1: Before the efficiency loss of CCFL inverter

Optical Specifications (Ta = 25°C)

| Item	Symbol	Min	Typ	Max	Unit
Contrast	CR	100	180	–	–
Response	t_{on}	–	15	50	ms
	t_{off}	–	25	50	ms
Luminance (I_{FL} = 3mA)	L	30	80	–	cd/m^2
Luminance (I_{FL} = 6mA)	L	–	170	–	cd/m^2

Dimensional Outline

Front View

Unit: mm
Standard Tolerance: 0.5mm

2

Purdy Electronics Corporation • 720 Palomar Avenue • Sunnyvale, CA 94085
Tel: 408.523.8200 • Fax: 408.733.1287 • email@purdyelectronics.com • www.purdyelectronics.com

4/1/05

Timing Specifications

| Item	Symbol	Min	Typ	Max	Unit
Frame Period	t1	604 x t3 –	628 x t3 16.58	628 x t3 17.86	– ms
Vertical Display Term	t2	600 x t3	600 x t3	600 x t3	t2 = N •t3
One Line Scanning Time	t3	844 x t5 (26.3)	1024 x t5 26.4	1056 x t5	– μs
Horizontal Display Period	t4	800 x t5	800 x t5	800 x t5	–
Clock Period	t5	24.0	25.0	_	ns
Clock "L" Time	t6	9.0	–	–	ns
Clock "H" Time	t7	9.0	–	–	ns
Set Up Time	t8	4.0	–	–	ns
Hold Time	t9	5.0	–	–	ns

Timing Chart

(A) Vertical Timing

(B) Horizontal Timing

800 Pixels

600 Lines
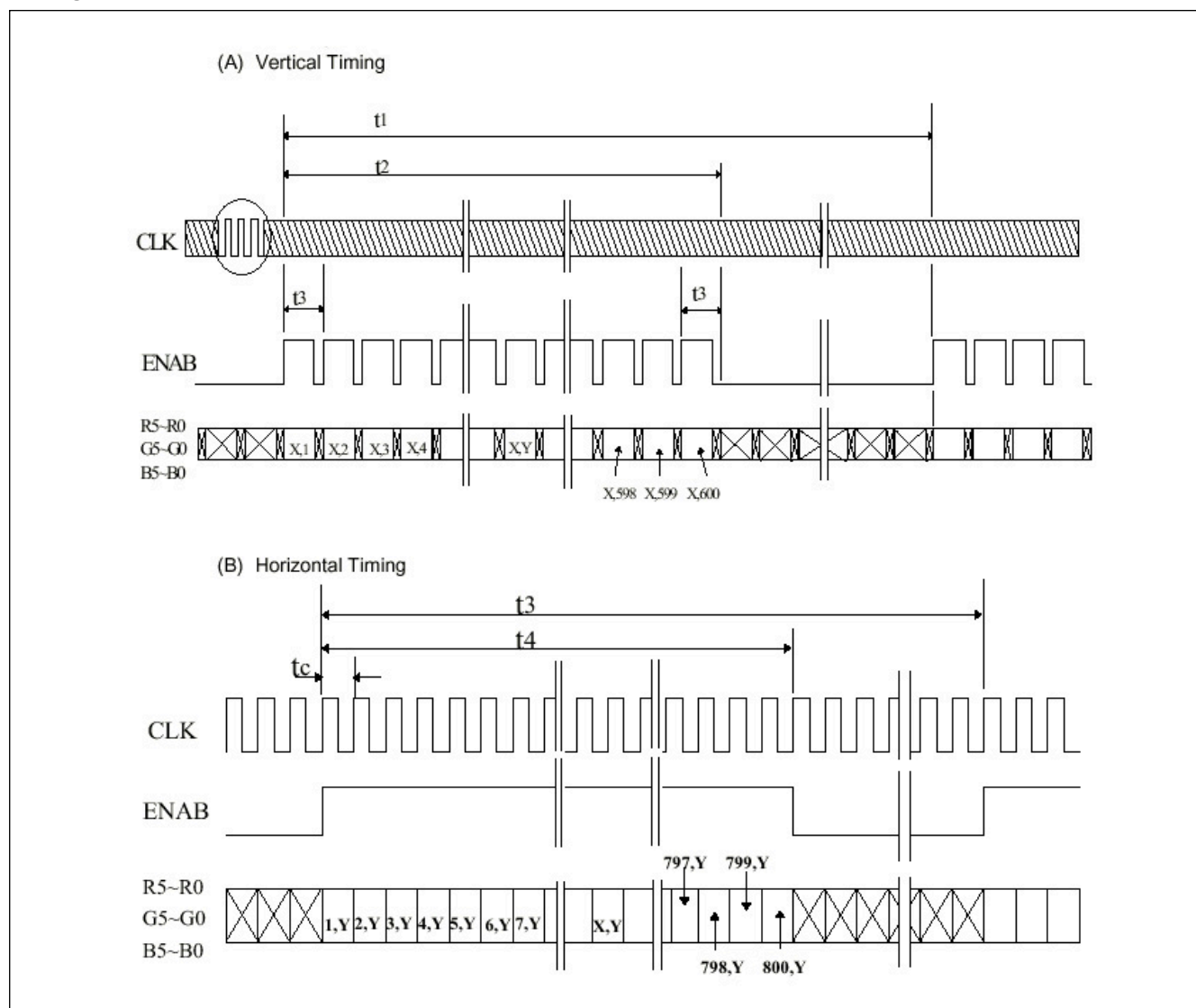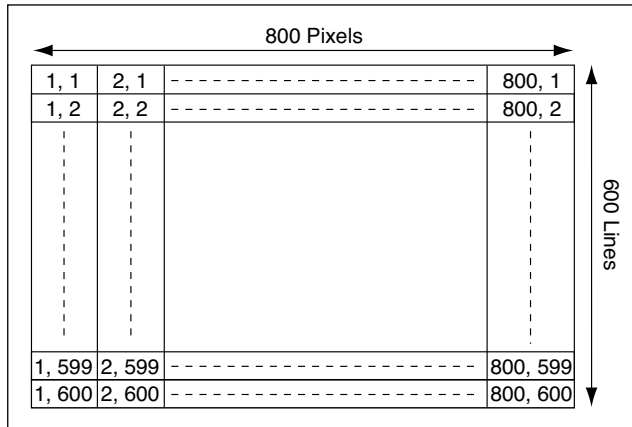
Recommended Inverter: TBD

Block Diagram
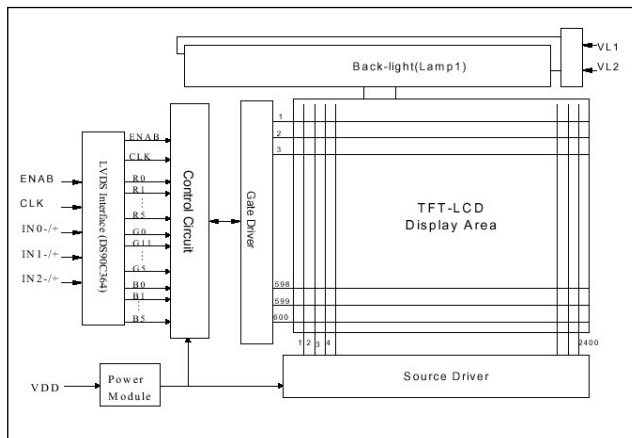
LVDS Interface Block Diagram
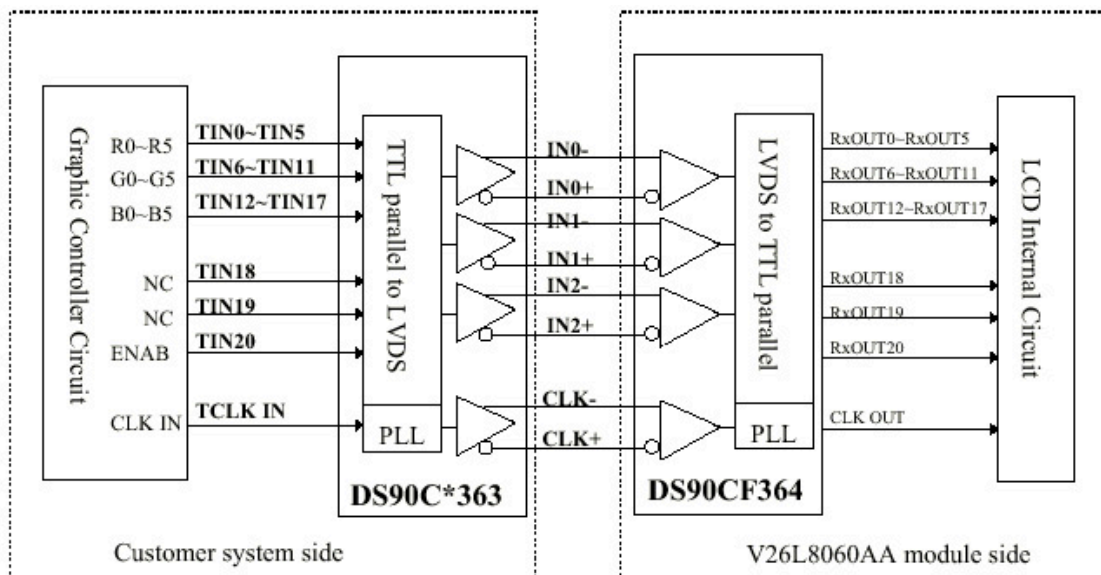
Connector Pin Assignment for Interface
CN1 Input Signal (1)
Molex - 55177-1491

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.

	Display	R5	R4	R3	R2	R1	R0	G5	G4	G3	G2	G1	G0	B5	B4	B3	B2	B1	B0	Gray Scale Level	
Basic Color	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	–	
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	–	
	Green	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	–	
	Lt. Blue	L	L	L	L	L	L	H	H	H	H	H	H	H	H	H	H	H	H	–	
	Red	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	–	
	Purple	H	H	H	H	H	H	L	L	L	L	L	L	H	H	H	H	H	H	–	
	Yellow	H	H	H	H	H	H	H	H	H	H	H	H	L	L	L	L	L	L	–	
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H		–	
Gray Scale of Red	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L0
	Dark	L	L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L		L1
		L	L	L	L	H	L	L	L	L	L	L	L	L	L	L	L	L	L		L2
	↑↓			:						:						:					L3~L60
				:						:						:					
		H	H	H	H	L	H	L	L	L	L	L	L	L	L	L	L	L	L		L61
	Light	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	L		L62
	Red	H	H	H	H	H	H	L	L	L	L	L	L	L	L	L	L	L	L	Red	L63
Gray Scale of Green	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L0
	Dark	L	L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L		L1
		L	L	L	L	L	L	L	L	L	L	H	L	L	L	L	L	L	L		L2
	↑↓			:						:						:					L3~L60
				:						:						:					
		L	L	L	L	L	L	H	H	H	H	L	H	L	L	L	L	L	L		L61
	Light	L	L	L	L	L	L	H	H	H	H	H	L	L	L	L	L	L	L		L62
	Green	L	L	L	L	L	L	H	H	H	H	H	H	L	L	L	L	L	L	Green	L63
Gray Scale of Blue	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L0
	Dark	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H		L1
		L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	H	L		L2
	↑↓			:						:						:					L3~L60
				:						:						:					
		L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	L	H		L61
	Light	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	L		L62
	Blue	L	L	L	L	L	L	L	L	L	L	L	L	H	H	H	H	H	H	Blue	L63
Gray Scale of White & Black	Black	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L		L0
	Dark	L	L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H		L1
		L	L	L	L	H	L	L	L	L	L	H	L	L	L	L	L	H	L		L2
	↑↓			:						:						:					L3~L60
				:						:						:					
		H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L	H		L61
	Light	H	H	H	H	H	L	H	H	H	H	H	L	H	H	H	H	H	L		L62
	White	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	H	White	L63