

XIAMEN PRECISE DISPLAY

SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY

PART NUMBER:

PCM0802B-RN-YBS-02

DATE:

2009.09.16

1.0 MECHANICAL SPECS

1. Overall Module Size	58.0mm(W) x 32.0mm(H) x max 9.5mm(D) for LED backlight version
2. Dot Size	0.56mm(W) x 0.66mm(H)
3. Dot Pitch	0.60mm(W) x 0.70mm(H)
4. Duty	1/16
5. Controller IC	ST7066U or Equivalent
6. LC Fluid Options	STN
7. Polarizer Options	Positive Yellow-green and Reflective
8. Viewing Angle	6:00 o'clock
9. Backlight Options	NC
10. Temperature Range Options	Operating:-20°C ~ +70°C; Storage:-30°C ~ +80°C

2.0 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min	Typ	Max	Unit
Operating temperature (Standard)	Top	0	-	50	°C
Storage temperature (Standard)	Tst	-20	-	70	°C
Input voltage	Vin	Vss		Vdd	V
Supply voltage for logic	Vdd- Vss	4.5	5.0	5.5	V
Supply voltage for LCD drive	Vdd- Vo	4.2	4.5	4.7	V

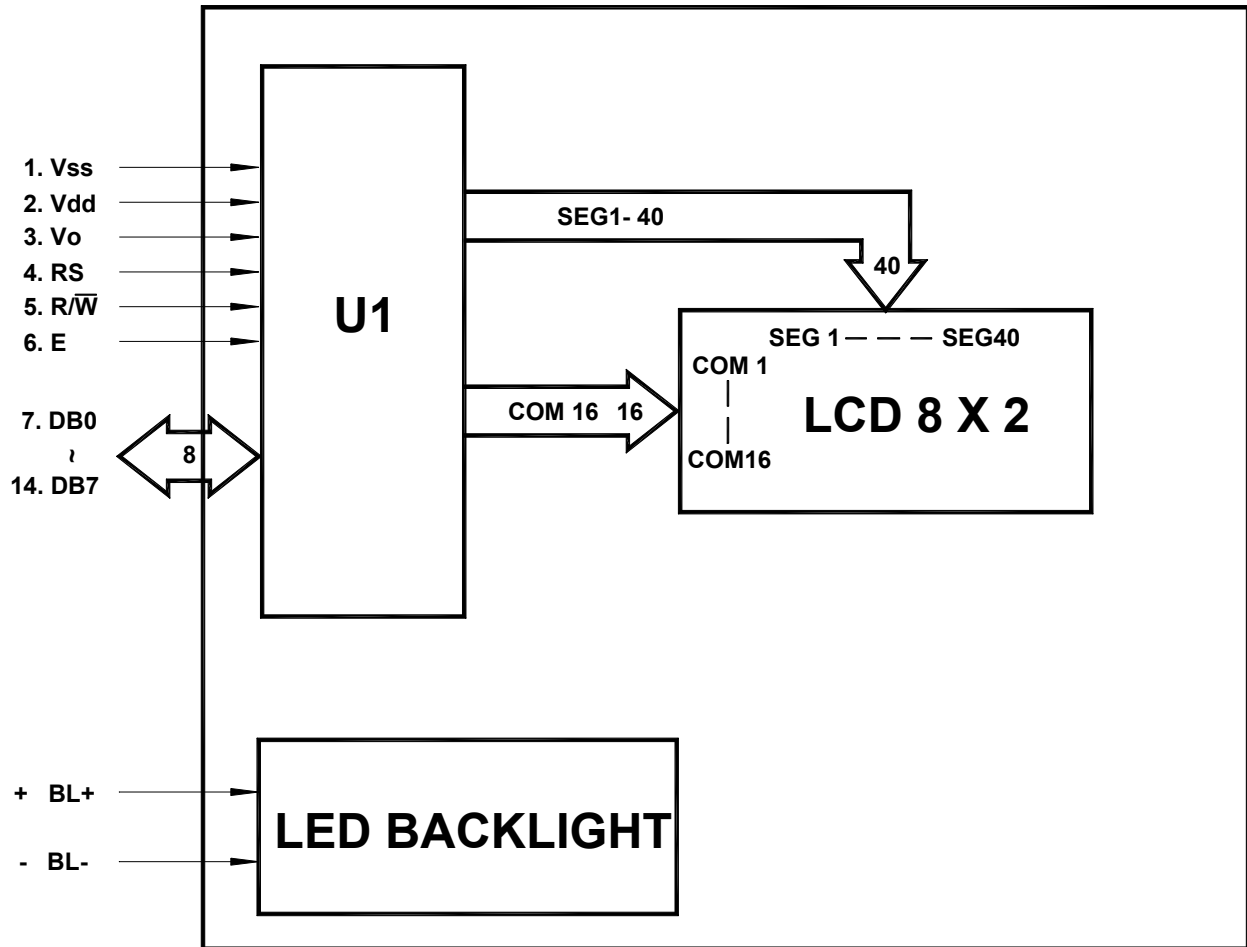
3.0 ELECTRICAL CHARACTERISTICS

Item	Symbol	Condition	Min	Typ	Max	Unit
Power Supply Voltage	Vdd	fosc=270kHz	4.5	5.0	5.5	V
Power Supply Current	Idd	Vdd=5.0V, fosc=270kHz	-	0.5	1.0	mA
Recommended LC Driving Voltage (Standard Temp)	Vdd - Vo	0°C	-	4.8	5.4	V
		25°C	4.2	4.5	-	
		50°C	3.9	4.3	-	
BackLight Power Supply Voltage	Vf	-	-	-	-	V
BackLight Power Supply Current	If	-	-	-	-	mA

4.0 OPTICAL CHARACTERISTICS (Ta=25°C, Vdd= 5.0V±0.25V, STN LC fluid)

Item	Symbol	Condition	Min	Typ	Max	Unit
Viewing angle (horizontal)	θ	Cr ≥ 2.0	-60	-	35	deg
Viewing angle (vertical)	ϕ	Cr ≥ 2.0	-40	-	40	deg
Contrast Ratio	Cr	$\phi=0^\circ, \theta=0^\circ$	-	6	-	
Response time (rise)	Tr	$\phi=0^\circ, \theta=0^\circ$	-	150	250	ms
Response time (fall)	Tf	$\phi=0^\circ, \theta=0^\circ$	-	150	250	ms

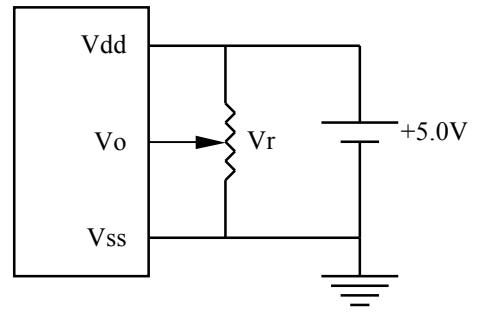
5.0 BLOCK DIAGRAM



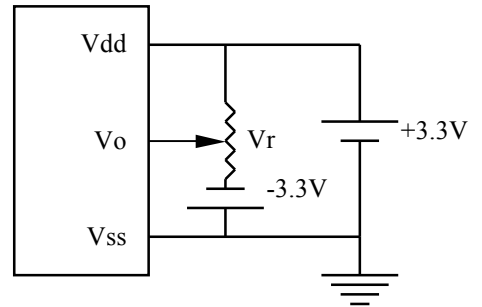
6.0 PIN ASSIGNMENT

Pin No.	Symbol	Function
1	V _{ss}	Ground
2	V _{dd}	+5.0V
3	V _o	LCD contrast adjust
4	RS	Register select
5	R/W	Read / write
6	E	Enable
7	DB0	Data bit 0
8	DB1	Data bit 1
9	DB2	Data bit 2
10	DB3	Data bit 3
11	DB4	Data bit 4
12	DB5	Data bit 5
13	DB6	Data bit 6
14	DB7	Data bit 7
15	NC	
16	NC	

7.0 POWER SUPPLY



STANDARD TEMP RANGE



WIDE TEMP RANGE

V_r = 10KΩ ~ 20KΩ

8.0 TIMING CHARACTERISTICS

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Enable cycle time	t _c	Fig. a, Fig. b	500	-	-	ns
Enable pulse width	t _w	Fig. a, Fig. b	220	-	-	ns
Enable rise/fall time	t _r , t _f	Fig. a, Fig. b	-	-	25	ns
RS, R/W set up time	t _{su}	Fig. a, Fig. b	40	-	-	ns
RS, R/W hold time	t _h	Fig. a, Fig. b	10	-	-	ns
Data delay time	t _d	Fig. b	-	-	120	ns
Data set up time	t _{dsu}	Fig. a	60	-	-	ns
Data hold time	t _{dH}	Fig. a, Fig. b	20	-	-	ns

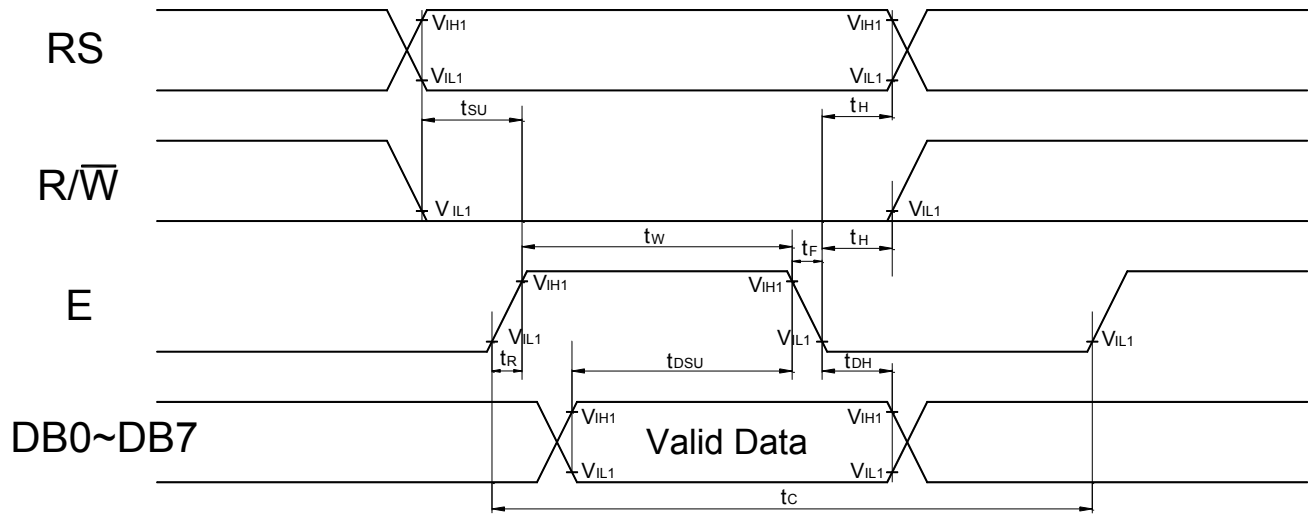


Fig. a Interface timing (data write)

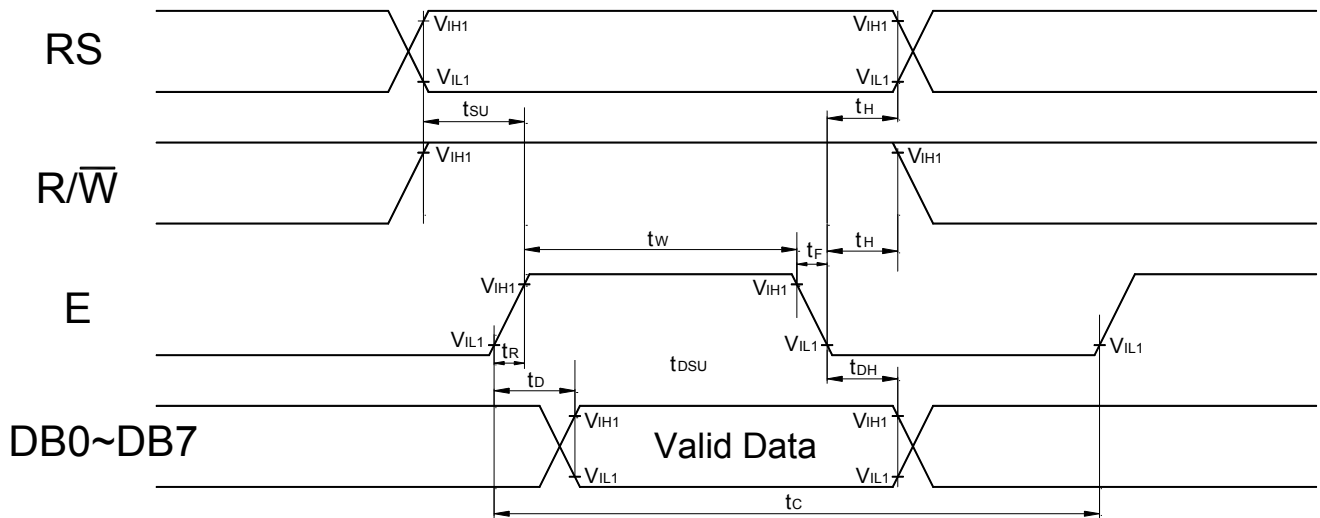
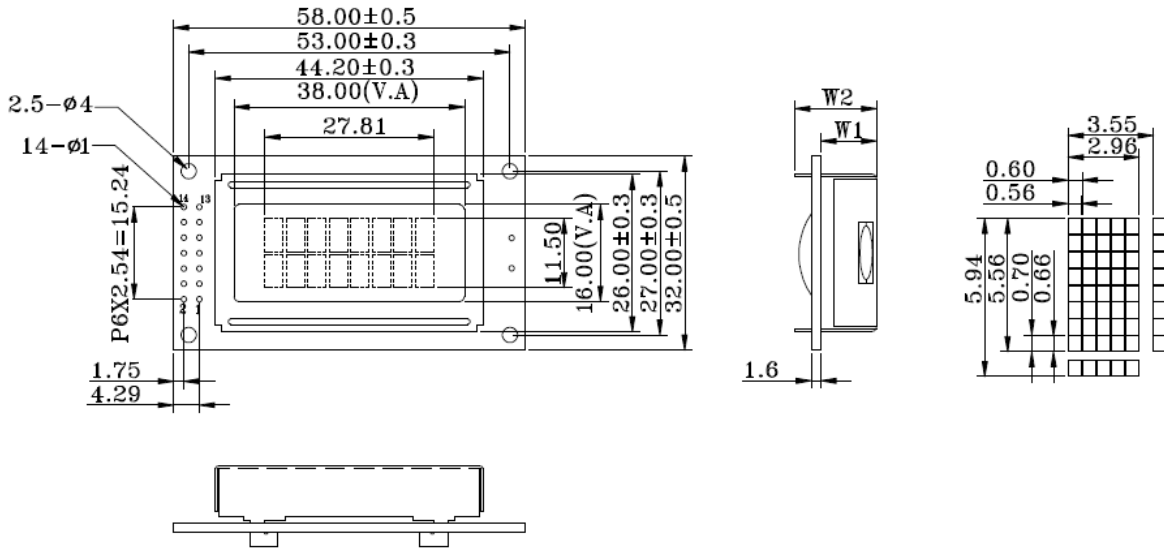


Fig. b Interface timing (data read)

9.0 MECHANICAL DIAGRAM



PERFORMANCE FEATURES	
LC FLUID:	STN
SUPPLY VOLTAGE:	VDD=5.0V
POLARIZER:	REFLECTIVE, POSITIVE
VIEWING ANGLE:	6:00
COLOR:	YELLOW-GREEN
BACKLIGHT:	NC
OPERATING TEMP:	-20°C TO +70°C
STORAGE TEMP:	-30°C TO +80°C
DRIVER:	ST7066U OR EQUIVALENT

Version	W1	W2
XL or WITHOUT BEL	5.20±0.5	9.50 MAX

TOLERANCES UNLESS OTHERWISE SPECIFIED ±0.2

PIN	1	2	3	4	5	6	7	8
SIGNAL	VSS	VDD	V0	RS	R/W	E	DB0	DB1
PIN	9	10	11	12	13	14	15	16
SIGNAL	DB2	DB3	DB4	DB5	DB6	DB7	NC	NC

		厦门精显电子有限公司 XIAMEN PRECISE DISPLAY CO., LTD.		
		客户确认:	绘图:LYB	
		审核:CAO	客户编号:PCM0802B-RN-YBS-02	日期:2009.09.16
		批准:ZHUANG	图纸版号: 01	页数:1/1

10.0 RELIABILITY TEST

Storage Condition	Content	Evaluations and Assessment*			
		Current Consumption	Oozing	Contrast	Other Appearances
Operation at high temperature and humidity	40°C,90% RH,240hrs	Twice initial value or less	none	More than 80% of initial value	No abnormality
High temperature storage	60°C, 240hrs	Twice initial value or less	none	More than 80% of initial value	No abnormality
Low temperature storage	-20°C, 240hrs	Twice initial value or less		More than 80% of initial value	No abnormality

*Evaluations and assessment to be made two hours after returning to room temperature (25°C±5°C).

*The LCDs subjected to the test must not have dew condensation.

11.0 DDRAM ADDRESS

1	2	3	4	5	6	7	8
00	01	02	03	04	05	06	07
40	41	42	43	44	45	46	47

12.0 DISPLAY INSTRUCTION TABLE

COMMAND	R S	R/ W	DB 7	DB 6	DB 5	DB 4	DB 3	DB 2	DB 1	DB 0	DESCRIPTION	Executing time fosc=250khz
Clear Display	0	0	0	0	0	0	0	0	0	1	Clears Display & Returns to Address 0.	1.64ms
Cursor at Home	0	0	0	0	0	0	0	0	1	x	Returns Cursor to Address 0. Also returns the display being shifted to the original position. DDRAM contents remain unchanged.	1.64ms
Entry Mode Set	0	0	0	0	0	0	0	1	I/D	S	I/D: Set Cursor Moving Direction I/D=1: Increment I/D=0: Decrement S: Specify Shift of Display S=1: The display is shifted S=0: The display is not shifted	40µs
Display ON/OFF Control	0	0	0	0	0	0	1	D	C	B	Display D=1: Display on D=0: Display off Cursor C=1: Cursor on C=0: Cursor off Brink B=1: Brink on B=0: Brink off	40µs
Cursor / Display Shift	0	0	0	0	0	1	S/C	R/L	x	x	Moves cursor or shifts the display w/o changing DD RAM contents S/C=0: Cursor Shift (RAM unchanged) S/C=1: Display Shift (RAM unchanged) R/L=1: Shift to the Right R/L=0: Shift to the Left	40µs
Function Set	0	0	0	0	1	DL	N	F	x	x	Sets data bus length (DL), # of display lines (N), and character fonts (F). DL=1: 8 bits F=0: 5x7 dots DL=0: 4 bits F=1: 5x10 dots N=0: 1 line display N=1: 2 lines display	40µs
Set CG RAM Address	0	0	0	1	Character Generator (CG) RAM Address						Sets CG RAM address. CG RAM data is sent and received after this instruction.	40µs
Set DD RAM Address	0	0	1	Display Data (DD) RAM Address / Cursor Address						Sets DD RAM address. DD Ram data is sent and received after this instruction.	40µs	
Busy Flag / Address Read	0	1	B F	Address counter used for both DD & CG RAM address						Reads Busy Flag (BF) and address counter contents.	40µs	
Write Data	1	0	Write Data						Writes data into DDRAM or CGRAM.	46µs		
Read Data	1	1	Read Data						Reads data from DDRAM or CGRAM.	46µs		

x: Don't Care

13.0 STANDARD CHARACTER PATTERNS

NO.7066-0A

b7-b4 b3-b0	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111
0000	CG RAM (1)			0	a	P	^	P				-	9	3	0	P
0001	(2)		!	1	R	Q	a	9			.	7	7	4	0	q
0010	(3)		"	2	B	R	b	r			7	7	7	x	p	0
0011	(4)		#	3	C	S	c	s			7	7	7	7	e	0
0100	(5)		\$	4	D	T	d	t			7	7	7	7	7	0
0101	(6)		%	5	E	U	e	u			.	7	7	7	7	0
0110	(7)		&	6	F	V	f	v			7	7	7	7	7	0
0111	(8)		'	7	G	W	g	w			7	7	7	7	7	0
1000	(1)		(8	H	X	h	x			7	7	7	7	7	0
1001	(2))	9	I	Y	i	y			7	7	7	7	7	0
1010	(3)		*	0	J	Z	j	z			7	7	7	7	7	0
1011	(4)		+	1	K	L	k	l			7	7	7	7	7	0
1100	(5)		,	2	L	4	l	4			7	7	7	7	7	0
1101	(6)		-	3	=	N	I	n	^		7	7	7	7	7	0
1110	(7)		.	4	>	N	^	n	^		7	7	7	7	7	0
1111	(8)		/	5	?	0	_	0	^		7	7	7	7	7	0

Note: The character generator RAM is the RAM with which the user can rewrite character patterns by program.