

Specification
For
LCD Module
TS1620B-7 高框(V1.0)

MODULE: TS1620B-7(V1.0)
CUSTOMER: _____

REV	DESCRIPTION	DATE
1	FIRST ISSUE	2008.01.15

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APREPARED BY	JC LIANG	2008.01.15
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CUSTOMER	INITIAL	DATE
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REV	DATE	CHANGE DETAIL	ORIGINATOR	REMARKS
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1.0 FEATURES

- Display Mode: STN, Yellow green, Transflective Positive
- Display forma: 16 Character x 2 Line
- Viewing Direction: 6:00 clock
- Display Font : 5 x 8 Dots
- Driving Scheme : 1/16Duty,1/5Bias
- Power Supply : Single Power Supply (+5V)
- VLCD Voltage: 4.7V
- Control IC: ST7066U-0A ,ST7065C
- Operating Temperature:-20°C ~ +70°C
- Storage Temperature:-30°C ~ +80°C
- Back light: Yellow green

2.0 ABSOLUTE MAXIMUM

Item	Symbol	Min.	Max.	Unit
Power Supply for logic	Vdd	-0.3	+7.0	V
Power supply for LCD Drive	Vlcd	Vdd-11.5	Vdd+0.3	V
Input Voltage	Vi	-0.3	Vdd+0.3	V
Operating Temperature	Ta	-20	+70	°C
Storage Temperature	Tstg	-30	+80	°C

3.0 ELECTRICAL CHARACTERISTICS

(Ta=25°C; Vdd=5.0V±10%, otherwise specified)

Item	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Power Supply for Logic	Vdd	--	4.7	5.0	5.5	V
Operating Voltage for LCD	Vdd-Vo	--	--	5.0	--	V
Input High voltage	Vih	--	2.2	--	Vdd	V
Input Low voltage	Vil	--	-0.3	--	0.6	V
Output High voltage	Voh	-Ioh=0.2mA	2.4	--	--	V
Output Low voltage	Vol	Iol=1.2mA	--	--	0.4	V
Power supply current	Idd	Vdd=3.0v	--	1.1	--	mA

4.0 MECHANICAL PARAMETERS

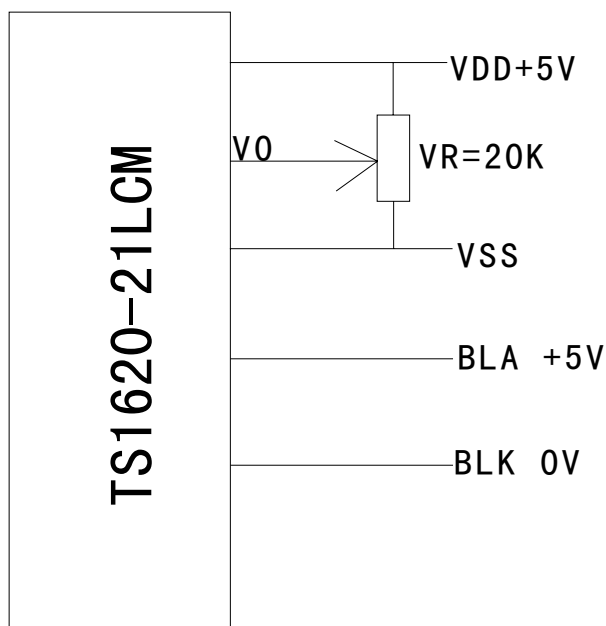
Item	Description	Unit
PCB Dimension	84.0*44.0	mm
View Dimension	64.0*16.0	mm

5. PIN ASSIGNMENT

PIN NO	SYMBOL	FUNCTION
1	VSS	Ground.(0V)
2	VDD	Power supply for logic circuit (+5V)
3	VO	Power supply for LCD

4	RS	Select registers. 0:Instruction registers.(for write) Busy flag: address counter(for read) 1:Data register(for writer and read)
5	R/W	Select read or write 0:Write 1:Read
6	E	Starts data read/write
7-14	DB0-DB7	Data pin
15	BLk	0V
16	BLA	Power supply for back light(+5.0V)

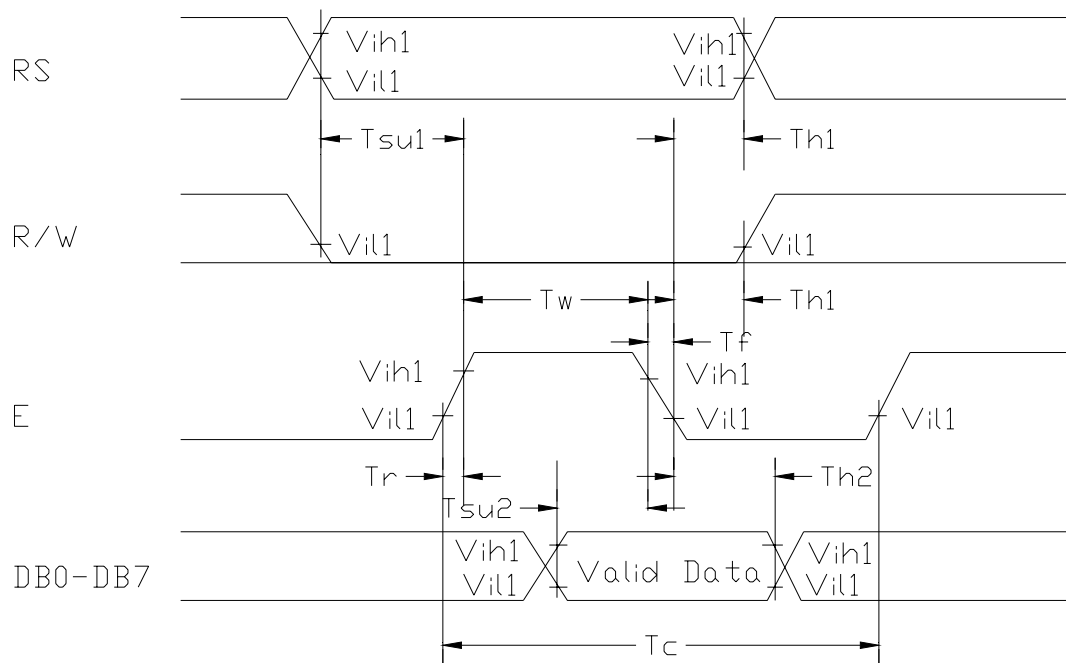
6.0 POWER SUPPLY BLOCK DIAGRAM



7.0 AC characteristics (V_{dd}=5V±10%, V_{ss}=0V T_a=25°C)

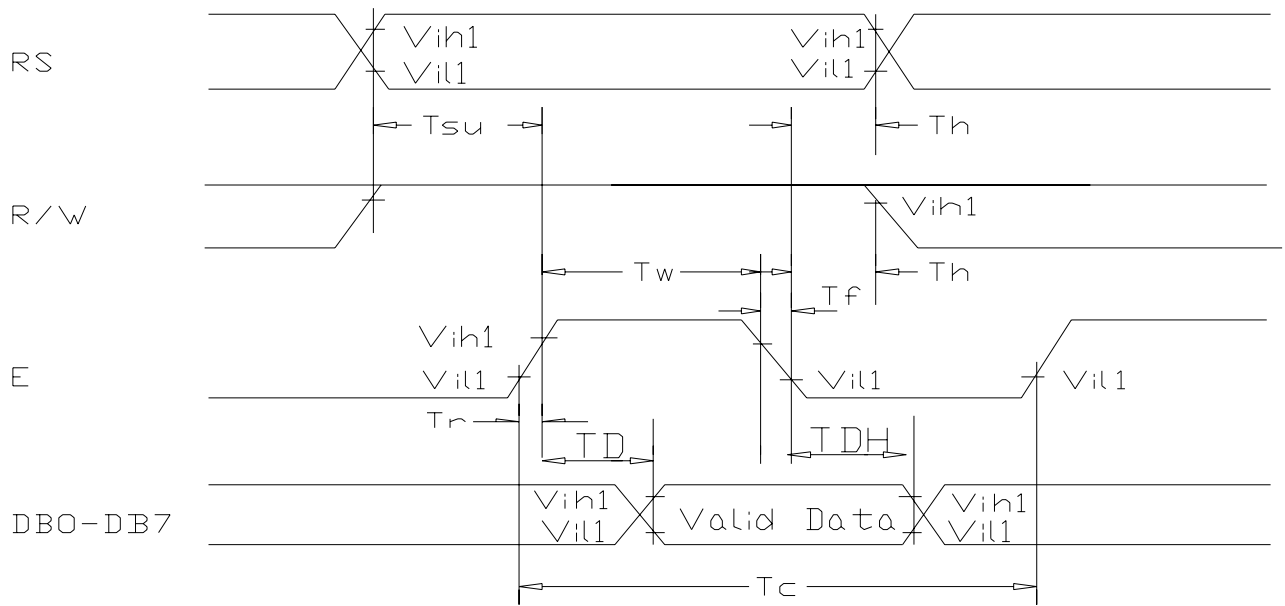
(1) Write mode (writing data from Micom to ST7066)

Characteristic	Symbol	Min.	Typ.	Max.	Unit	Test pin
E cycle time	t _c	500	--	--	ns	E
E rise time	t _r	--	--	25	ns	E
E fall time	t _f	--	--	25	ns	E
E pulse width (High,Low)	t _w	220	--	--	ns	E
R/W and RS set-up time	t _{su1}	40	--	--	ns	R/W,RS
R/w and RS hold time	t _{h1}	10	--	--	ns	R/W,RS
Data set-up time	t _{su2}	60	--	--	ns	DB0~DB7
Data hold time	t _{h2}	10	--	--	ns	DB0~DB7



www (2)Read mode(Reading data from ST0066 to Micom)

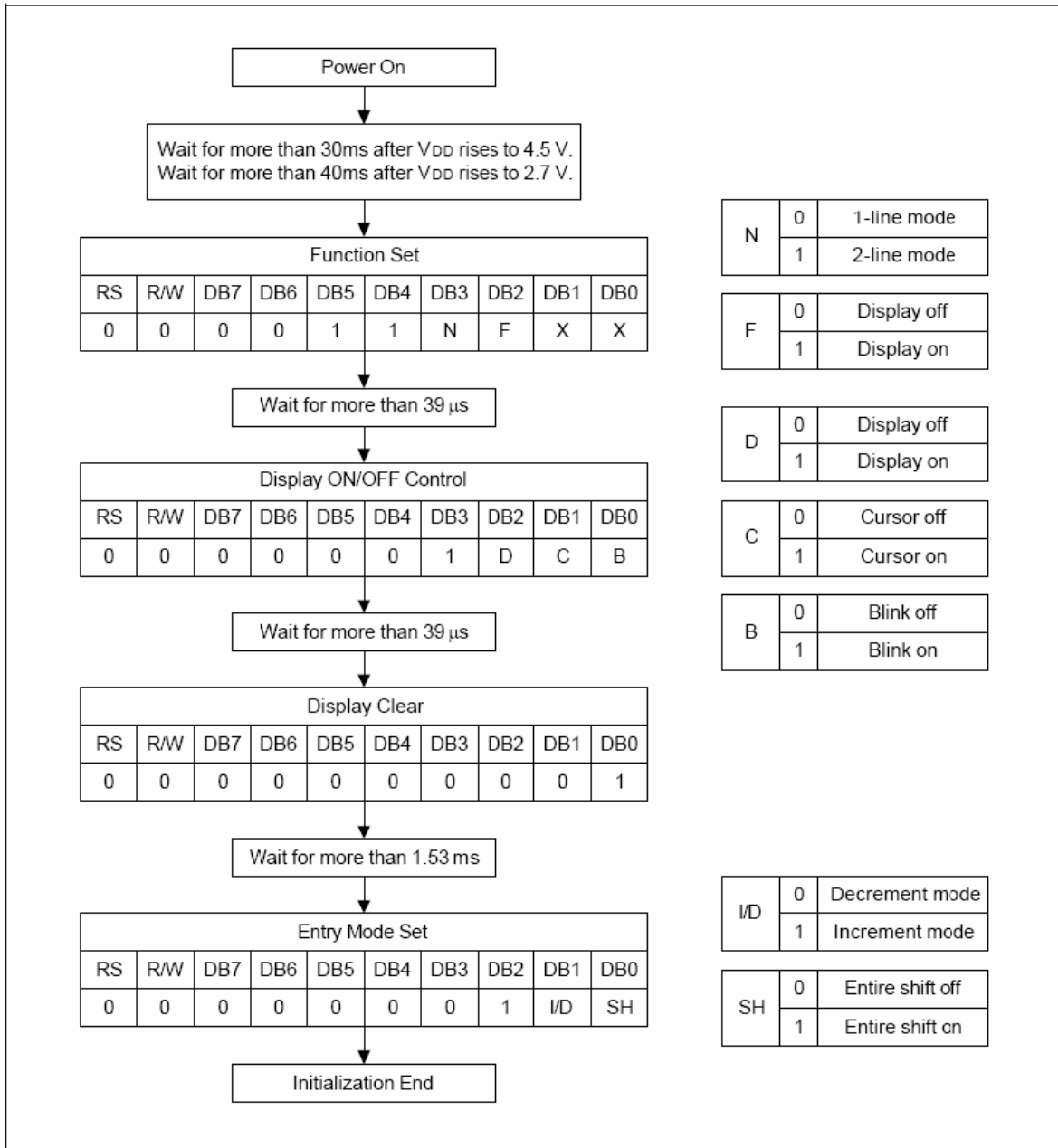
Characteristic	Symbol	Min.	Typ.	Max.	Unit	Test pin
E cycle time	t_c	500	--	--	ns	E
E rise time	t_r	--	--	25	ns	E
E fall time	t_f	--	--	25	ns	E
E pulse width (High,Low)	t_w	220	--	--	ns	E
R/W and RS set-up time	t_{su1}	40	--	--	ns	R/W,RS
R/w and RS hold time	t_{h1}	10	--	--	ns	R/W,RS
Data set-up time	t_{su2}	--	--	120	ns	DB0~DB7
Data hold time	t_{h2}	20	--	--	ns	DB0~DB7



8.0 CONTROL AND DISPLAY COMMAND

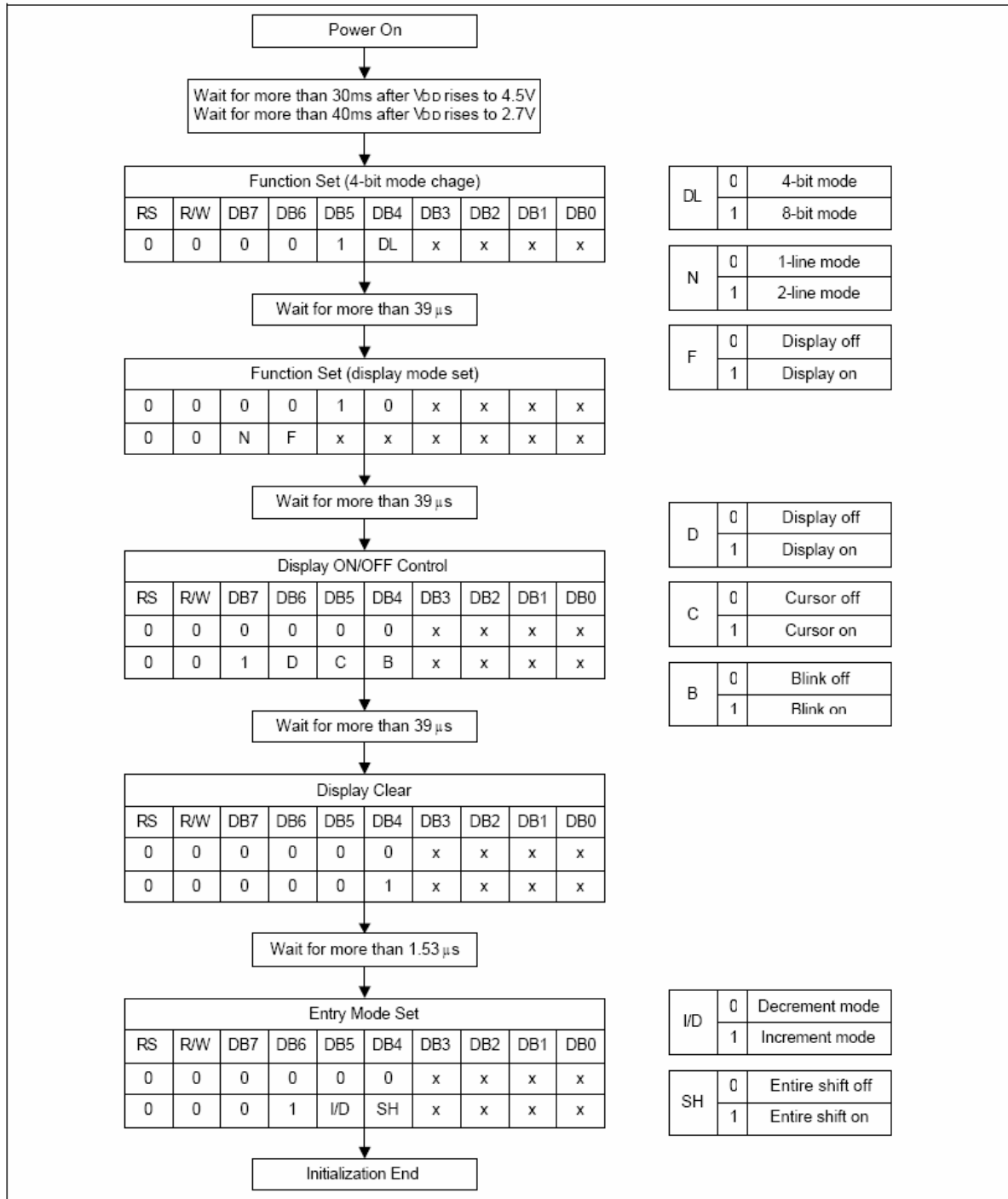
Instruction	Instruction Code										Description	Description Time (270KHz)	
	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0			
Clear Display	0	0	0	0	0	0	0	0	0	0	1	Write "20H" to DDRAM. and set DDRAM address to "00H" from AC	1.52 ms
Return Home	0	0	0	0	0	0	0	0	0	1	x	Set DDRAM address to "00H" from AC and return cursor to its original position if shifted. The contents of DDRAM are not changed.	1.52 ms
Entry Mode Set	0	0	0	0	0	0	0	0	1	I/D	S	Sets cursor move direction and specifies display shift. These operations are performed during data write and read.	37 us
Display ON/OFF	0	0	0	0	0	0	0	1	D	C	B	D=1:entire display on C=1:cursor on B=1:cursor position on	37 us
Cursor or Display Shift	0	0	0	0	0	1	S/C	R/L	x	x	x	Set cursor moving and display shift control bit, and the direction, without changing DDRAM data.	37 us
Function Set	0	0	0	0	1	DL	N	F	x	x	x	DL:interface data is 8/4 bits N:number of line is 2/1 F:font size is 5x11/5x8	37 us
Set CGRAM address	0	0	0	1	AC5	AC4	AC3	AC2	AC1	AC0	AC0	Set CGRAM address in address counter	37 us
Set DDRAM address	0	0	1	AC6	AC5	AC4	AC3	AC2	AC1	AC0	AC0	Set DDRAM address in address counter	37 us
Read Busy flag and address	0	1	BF	AC6	AC5	AC4	AC3	AC2	AC1	AC0	AC0	Whether during internal operation or not can be known by reading BF. The contents of address counter can also be read.	0 us
Write data to RAM	1	0	D7	D6	D5	D4	D3	D2	D1	D0	D0	Write data into internal RAM (DDRAM/CGRAM)	37 us
Read data from RAM	1	1	D7	D6	D5	D4	D3	D2	D1	D0	D0	Read data from internal RAM (DDRAM/CGRAM)	37 us

8-bit Interface Mode (Condition: $f_{OSC} = 270 \text{ kHz}$)



4-bit Interface Mode (Condition: $f_{OSC} = 270 \text{ kHz}$)

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9.0 DIMENSION DIAGRAM

