

DISPLAYTRONIC

A DIVISION OF ZE XIAMEN CO., LTD.

SPECIFICATIONS FOR LIQUID CRYSTAL DISPLAY

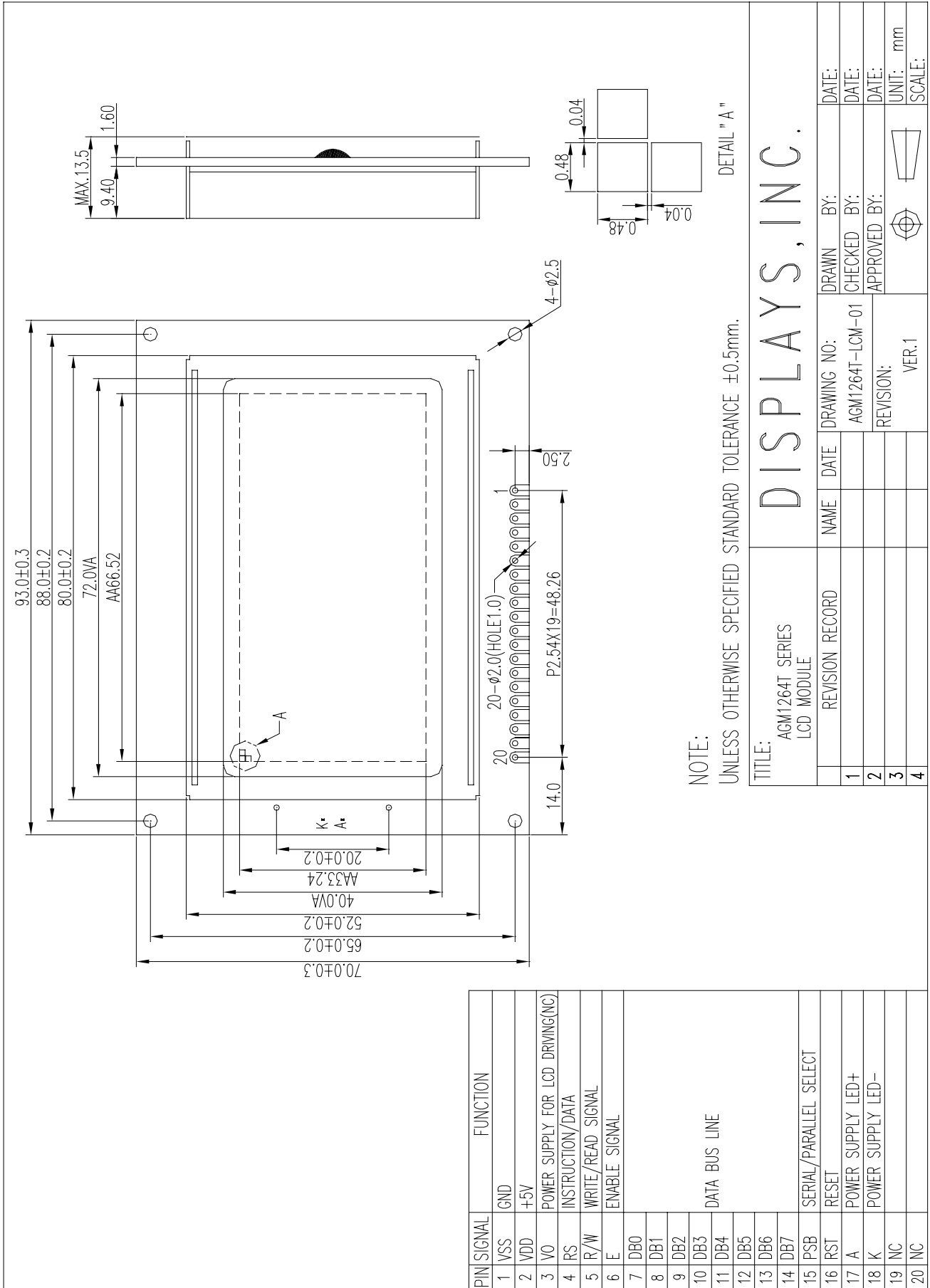
PART NUMBER:

AGM 1264T SERIES

DATE:

APRIL- 3- 2004

1.0 MECHANICAL DIAGRAM



NOTE:
UNLESS OTHERWISE SPECIFIED STANDARD TOLERANCE ±0.5mm.

TITLE:		AGM1264T SERIES LCD MODULE		DRAWING NO:		DRAWN BY:		DATE:	
REVISION RECORD		NAME		DATE		CHECKED BY:		DATE:	
1						AGM1264T-LCM-01		DATE:	
2						REVISION:		DATE:	
3						VER.1		UNIT: mm	
4								SCALE:	

DISPLAYS, INC.

PIN SIGNAL	FUNCTION
1	VSS GND
2	VDD +5V
3	VO POWER SUPPLY FOR LCD DRIVING(VC)
4	RS INSTRUCTION/DATA
5	R/W WRITE/READ SIGNAL
6	E ENABLE SIGNAL
7	DB0
8	DB1
9	DB2
10	DB3
11	DB4
12	DB5
13	DB6
14	DB7
15	PSB SERIAL/PARALLEL SELECT
16	RST RESET
17	A POWER SUPPLY LED+
18	K POWER SUPPLY LED-
19	NC
20	NC

2.0 GENERAL SPECIFICATION

1. Overall Module Size	93.0mm(W) x 70.0mm(H) x max 13.5mm(D) for LED backlight version 93.0mm(W) x 70.0mm(H) x max 9.5mm(D) for reflective version
2. View Size	72.0mmX40.0mm
3. Active Area	66.52mmX33.24mm
4. Dot Size	0.48mm(W) x 0.48mm(H)
5. Dot Pitch	0.52mm(W) x 0.52mm(H)
6. View Angle	6 Clock
7. LC Fluid Options	STN FSTN
8. Polarizer Options	Reflective, Transflective, Transmissive
9. Duty	1/32DUTY 1/6 BIAS
10. Controller IC	ST7920
11. Backlight Options	LED
12. Temperature Range Options	Standard (0°C ~ 50°C), Wide (-20°C ~ 70°C)
13. Bus interface	8bit/4bit and 3 wire serial

3.0 ABSOLUTE MAXIMUM RATINGS

Item	Symbol	Min	Typ	Max	Unit
Operating temperature (Standard)	Top	0	-	50	°C
Storage temperature (Standard)	Tst	-10	-	60	°C
Operating temperature (Wide temperature)	Top	-20	-	70	°C
Storage temperature (Wide temperature)	Tst	-30	-	80	°C
Input voltage	Vin	Vss		Vdd	V
Supply voltage for logic	Vdd- Vss	-0.3	-	5.5	V
Supply voltage for LCD drive	Vdd- Vo	-0.3		7.0	V

4.0 ELECTRICAL CHARACTERISTICS

Item	Symbol	Condition	Min	Typ	Max	Unit
Input voltage (high)	Vih	H level	Vdd-1	-	Vdd	V
Input voltage (low)	Vil	L level	0	-	0.1Vdd	V
Recommended LC Driving Voltage (Standard Temp)	Vlcd	0°C	3.0-		7.0	V
		25°C	-	6.5	-	
		50°C			6.5-	
Recommended LC Driving Voltage (Wide Temp)	Vlcd	-20°C	-		7	V
		0°C	-		-	
		70°C			6.0	
Power Supply Current	Idd	Vdd=5.0V	-	-	5.0	mA
LED Power Supply Voltage	Vfled	R=6.8Ω	-	4.6	5.0	V
LED Power Supply Current	Ifled	R=6.8Ω	-		360	mA

5.0 OPTICAL CHARACTERISTICS

Item		Cr (Contrast Ratio)		θ (Viewing Angle)		φ (Viewing Angle)	
		25°C		25°C		25°C	
		MIN.	TYP.	MIN	TYP.	MIN	TYP.
R	A	4.9	5.3	80°	85°	-	35°
	B	6.8	7.0	80°	85°	-	35°
	C	-	-	-	-	-	-
S	A	5.1	5.5	80°	85°	-	35°
	B	7.05	7.55	80°	85°	-	35°
	C	-	-	-	-	-	-

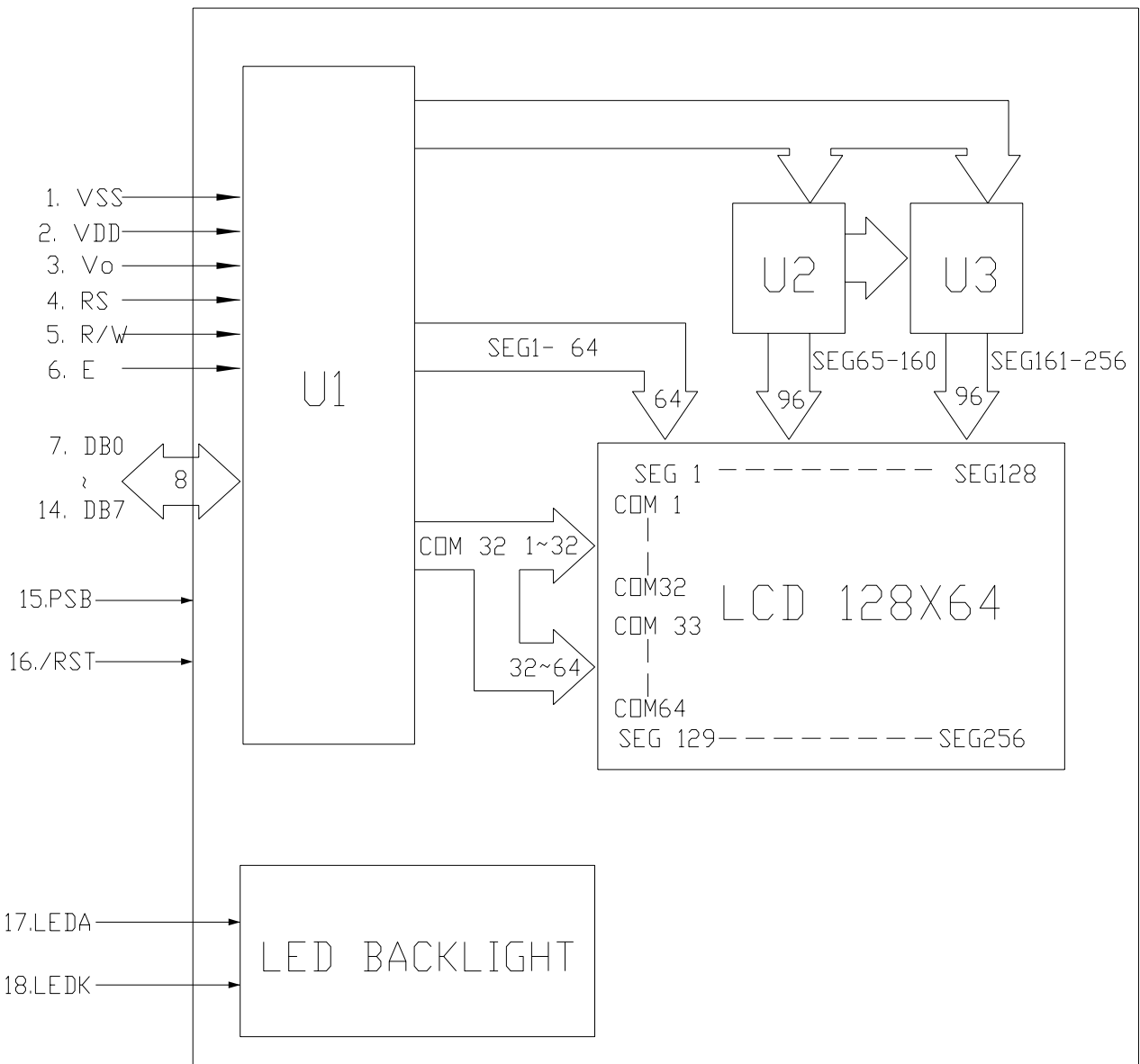
Note:

- R: Reflective
- S: Transflective
- A: STN Gray
- B: STN Yellow
- C: FSTN

At: φ =0°, θ =0°

Item	Symbol	Condition	Min	Typ	Max	Unit
Response time (rise)	Tr	25 °C	-	140	280	ms
Response time (fall)	Tf	25°C	-	80	160	ms

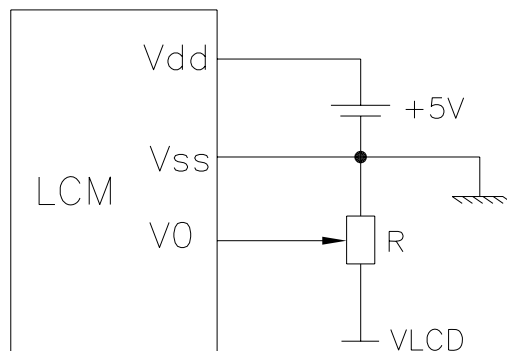
6.0 BLOCK DIAGRAM



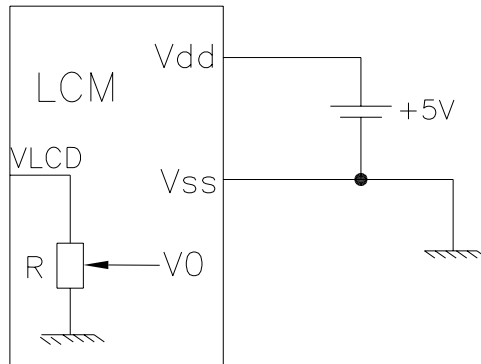
7.0 PIN ASSIGNMENT

Pin No.	Symbol	Function	Level
1	Vss	Ground	-
2	Vdd	+5V	-
3	Vo/NC	LCD contrast adjust/NC	-
4	RS(CS)	H: Data input L: Instruction code input	H/L
5	R/W(SID)	H: Data read L: Data write	H/L
6	E(SCLK)	Enable signal	H,H → L
7	DB0	Data bit 0	H/L
8	DB1	Data bit 1	H/L
9	DB2	Data bit 2	H/L
10	DB3	Data bit 3	H/L
11	DB4	Data bit 4	H/L
12	DB5	Data bit 5	H/L
13	DB6	Data bit 6	H/L
14	DB7	Data bit 7	H/L
15	PSB	Serial/Paraller select-	H/L
16	RES	Reset	H/L
17	A	Power Supply for BL+	
18	K	Power Supply for BL-	
19	NC		
20	NC		-

8.0 POWER SUPPLY



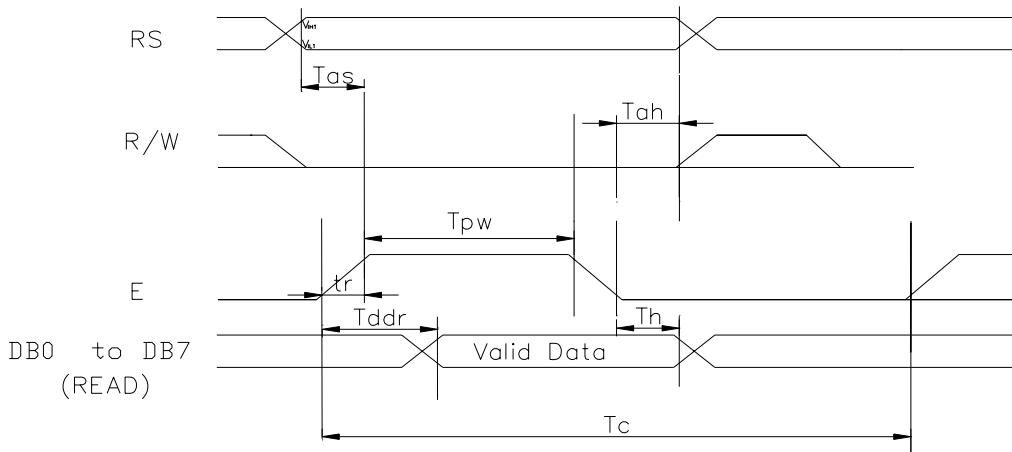
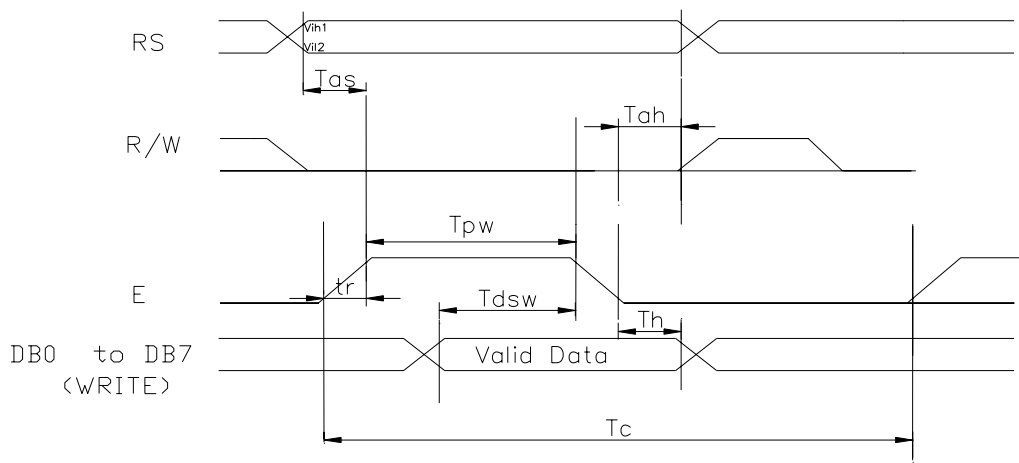
R=10K~20KΩ external adjust V0



internal adjust V0

9.0 TIMING CHARACTERISTICS

Item	Symbol	Min.	Typ.	Max.	Unit
Enable cycle time	t_{cyc}	1000	-	-	ns
E plus width	t_{WH}	450	-	-	ns
Enable rise/fall time	T_r, t_f	-	-	25	ns
Address set up time	t_{AS}	140	-	-	ns
Address hold time	t_{AH}	10	-	-	ns
Data delay time	t_{DDR}	-	-	320	ns
Data set up time	t_{DSW}	200	-	-	ns



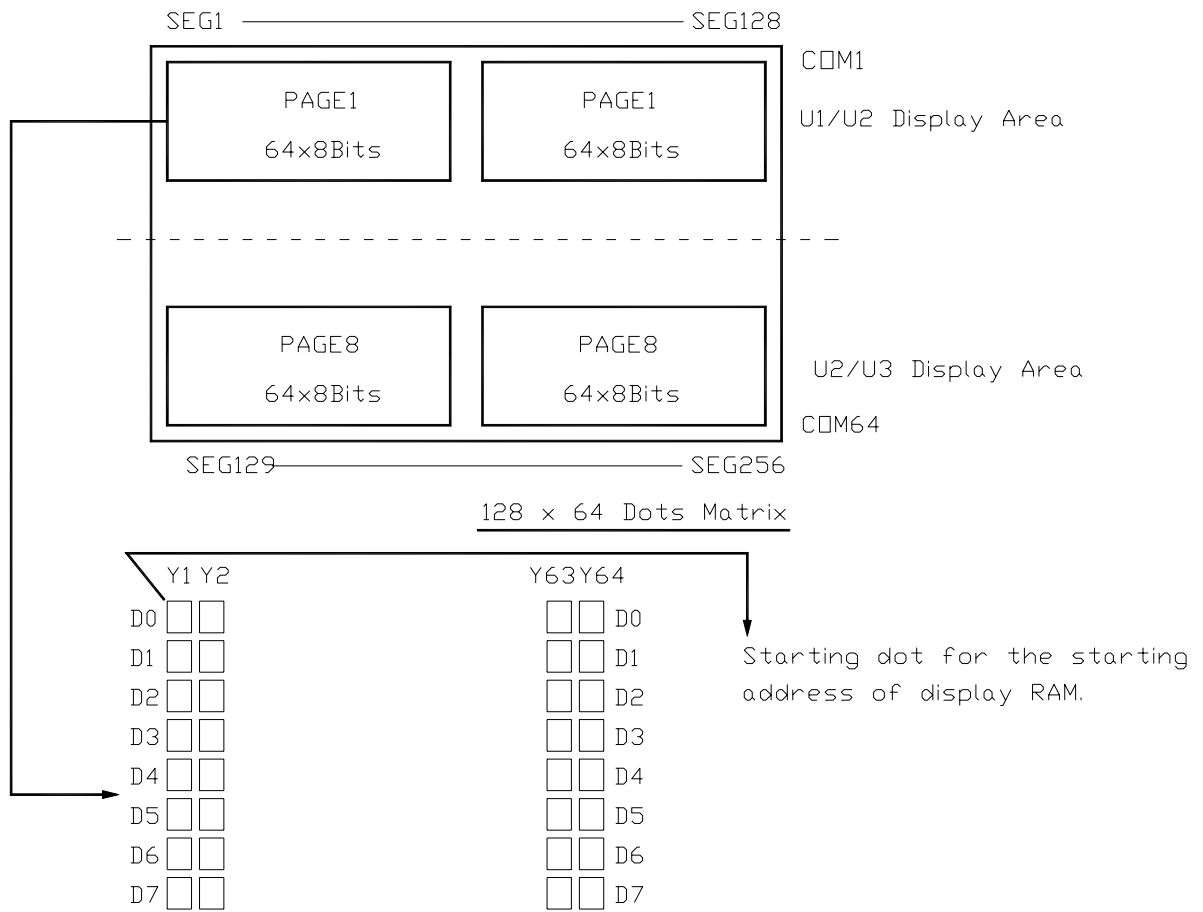
10.0 RELIABILITY TEST

Test Item	Content	Evaluations and Assessment*			
		Current Consumption	Oozing	Contrast	Other Appearances
Operation at high temperature	70°C,200hrs	Twice initial value or less	none	More than 50% of initial value	No abnormality
Operation at low temperature	-20°C,200hrs	Twice initial value or less	none	More than 50% of initial value	No abnormality
High temperature storage	80°C, 200hrs	Twice initial value or less	none	More than 50% of initial value	No abnormality
Low temperature storage	-30°C, 200hrs	Twice initial value or less	none	More than 50% of initial value	No abnormality

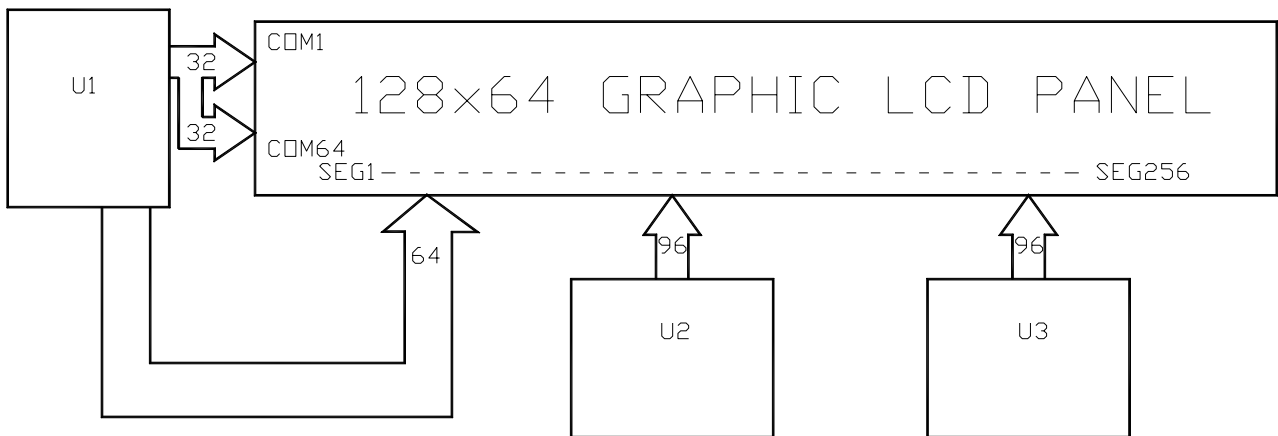
*Evaluations and assessment to be made two hours after returning to room temperature (25°C±5°C).

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

11.0 RELATION BETWEEN DISPLAY PATTERN AND DRIVERS



Each segment driver has 8 pages RAM, and each page has 64x8 bits RAM. D0~D7 are 8 bits transmitted data, where D0 is LSB and D7 is MSB.



80H	81H	82H	83H	84H	85H	86H	87H
90H	91H	92H	93H	94H	95H	96H	97H
88H	89H	8AH	8BH	8CH	8DH	8EH	8FH
98H	99H	9AH	9BH	9CH	9DH	9EH	9FH

12.0 DISPLAY CONTROL INSTRUCTION

Instruction set 1: (RE=0: basic instruction)

INSTRUCTION	RS	R/W	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	DESCRIPTION
clear	0	0	0	0	0	0	0	0	0	1	Fill DDRAM with "20H", and set DDRAM address counter (AC) to "00H"
home	0	0	0	0	0	0	0	0	1	X	Set DDRAM address counter (AC) to "00H", and put cursor to origin ; the content of DDRAM are not changed
Enter mode	0	0	0	0	0	0	0	1	I/D	S	Set cursor position and display shift when doing write or read operation
Displayjon/off	0	0	0	0	0	0	1	D	C	B	D=1: display ON C=1: cursor ON B=1: blink ON
Cursor displsy control	0	0	0	0	0	1	S/C	R/L	X	X	Cursor position and display shift control ; the content of DDRAM are not changed
Function set	0	0	0	0	1	DL	X	0 RE	X	X	DL=1 8-BIT interface DL=0 4-BIT interface RE=1: extended instruction RE=0: basic instruction
Set CGRAM	0	0	0	1	AC5	AC4	AC3	AC2	AC1	AC0	Set CGRAM address to address counter (AC) Make sure that in extended instruction SR=0 (scroll or RAM address select)
Set DDRAM	0	0	1	0 AC6	AC5	AC4	AC3	AC2	AC1	AC0	Set DDRAM address to address counter (AC) AC6 is fixed to 0
Read busy	0	1	BF	AC6	AC5	AC4	AC3	AC2	AC1	AC0	Read busy flag (BF) for completion of internal operation, also Read out the value of address counter (AC)
write	1	0	D7	D6	D5	D4	D3	D2	D1	D0	Write data to internal RAM (DDRAM/CGRAM/IRAM/GDRAM)
read	1	1	D7	D6	D5	D4	D3	D2	D1	D0	Read data from internal RAM (DDRAM/CGRAM/IRAM/GDRAM)