

# SPECIFICATION



## YMSC-G12864D-1DYSYWD

November 23, 2007  
Version 1.0





## CONTENTS

1.	GENERAL SPECIFICATIONS -----	3
2.	FEATURES-----	3
3.	MACHANICAL SPECIFICATIONS-----	3
4.	ABSOLUTE MAXIMUM RANGE-----	5
5.	ELECTRICAL CHARACTERISTICS -----	5
6.	OPTICAL CHARACTERISITICS-----	6
7.	TIMING CHARACTERISITICS-----	7
8.	PIN ASSIGNMENT-----	9
9.	BLOCK DIAMGRAM-----	10
10.	OUTLINE DIMENSIONS-----	10
11.	ENVIROMENTAL ABSOLUTE MAXIMUM RATINGS-----	11
12.	RELIABILITY-----	12
13.	PRECAUTION FOR USE-----	12



**1. GENERAL SPECIFICATIONS :**

1-1 SCOPE:

This specification covers the delivery requirements for the liquid crystal display delivered by YAOYU TECHNOLOGY to Customer .

1-2 PRODUCTS:

Liquid Crystal Display Module (LCM)

1-3 MODULE NAME:

**YMSC-G12864D-1DYSYWD**

**2.FEATURES**

Item	Standard Value
Display Type	128 *64 dots
LCD Type	<input type="checkbox"/> FSTN, BLUE,Transmissive,Negative,Extened TEMP <input type="checkbox"/> FSTN, Transflective,Positive,Extened TEMP <input type="checkbox"/> STN, BLUE,Transmissive,Negative,Extened TEMP <input type="checkbox"/> STN, GREY,Transflective,Positive,Extened TEMP <input checked="" type="checkbox"/> STN, Yellow-GREEN,Positive,Extended TEMP
Drive Pattern	1/64 Duty, 1/9Bias
Viewing Direction	6 O'clock
Backlight Type	<input type="checkbox"/> YELLOW-GREEN LED BOTTOM BL <input checked="" type="checkbox"/> YELLOW-GREEN SIDE LED BL <input type="checkbox"/> CCFL WHITE BL
Weight	TBD
Interface	8-bit 6800/8080 MPU interface
Driver IC	KS0108B

**3.MACHANICAL SPECIFICATIONS**



ITEM	STANDARD VALUE	UNIT
DISPLAY FORMAT	128 X 64 DOTS	
MODULE DIMENSION	76.0(W) X 51.1(H) X 10.5(T)	mm
EFFECTTVE DISPLAY AREA	64.0(W) X33.0(H)	mm
DOT SIZE	0.44(W) X 0.44(H)	mm
DOT PITCH	0.48(W) X 0.48 (H)	mm
LCD TYPE	YELLOW-GREEN, STN	
DUTY AND BIAS	1/64 DUTY; 1/9 BIAS	
VIEWING DIRECTION	6:00	
BACK LIGHT	YELLOW-GREEN SIDE LED	

#### 4.ABSOLUTE MAXMIMUM RANGE

ITEM	SYMBOL	CONDITION	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
POWER SUPPLY FOR LOGIC	VDD	Ta=25°C	-0.3	—	7.0	V
INPUT VOLTAGE	VIN	Ta=25°C	-0.3	—	VDD+0.3	V
Module OPERATION TEMPERATURE	TOPR	---	-10	—	+60	°C
Module STORAGE TEMPERATURE	TSTG	---	-20	—	+70	°C
Storage Humidity	H <sub>D</sub>	Ta < 40 °C	-		90	%RH

#### 5.ELECTRICAL CHARATERISTICS

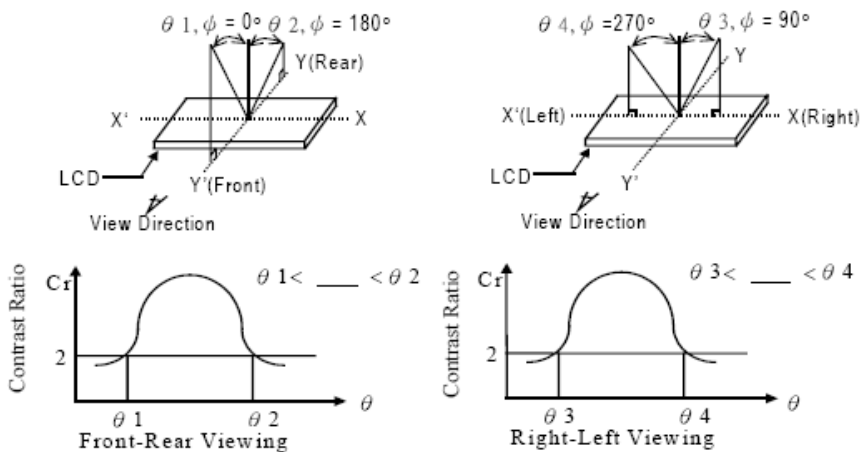
ITEM	SYMBO L	CONDITIO N	MIN	TYP	MA X	UN IT
Supply Voltage (LCD)	Vlcd	Vdd=5V (25°C)	8.3	8.5	8.7	V
Input signal voltage	V-ih	"H" level	2.0	-	Vdd	V
	V-il	"L" level	0	-	0.8	V
Output signal voltage	V-oh	"H" level	2.4	-	Vdd	V
	V-ol	"H" level	0	-	0.4	V
Supply Current (logic)	Icc	-	-		1.2	mA
Supply Current (LCD)	Io	-	0.15	0.22	0.27	mA
Supply Voltage (LED )	V-bl	See note 1	2.1	2.2	2.3	V
Supply Current (LED )	I-bl	See note 1	-	100		mA

Note1:We have set some resistors between backlight and the backlight power supply 'A'.

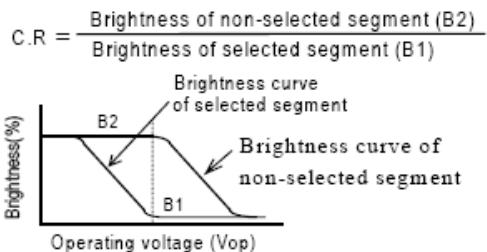


## 6.OPTICAL CHARACTERISTICS

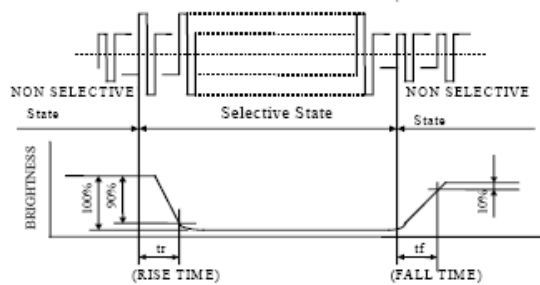
### (1) DEFINITION OF VIEWING ANGLE



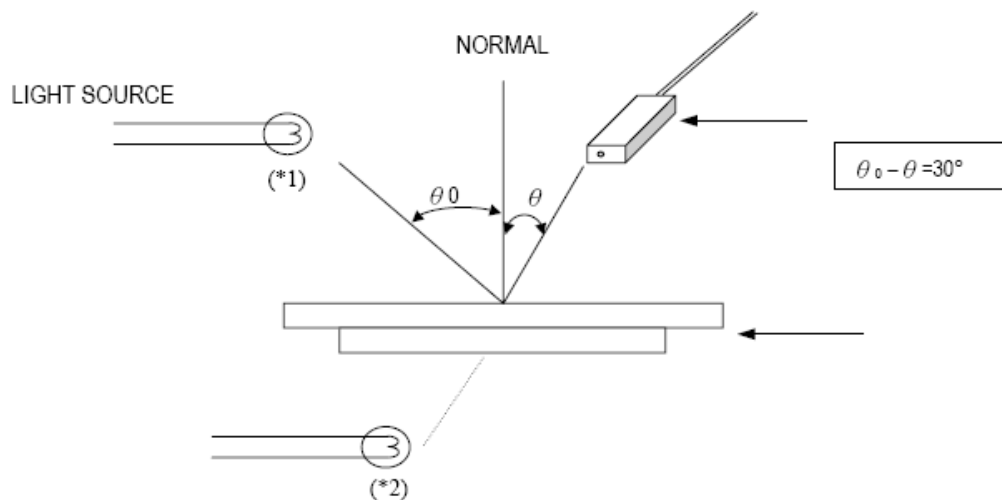
### (2) DEFINITION OF CONTRAST



### (3) DEFINITION OF RESPONSE



### (4) Measuring Instruments For Electro-optical Characteristics





## 7. TIMING CHARACTERISTICS

### 1. Clock Timing

Characteristic	Symbol	Min	Typ	Max	Unit
CLK1, CLK2 Cycle Time	$t_{CY}$	2.5	-	20	$\mu$ s
CLK1 'LOW' Level Width	$t_{WL1}$	625	-	-	ns
CLK2 'LOW' Level Width	$t_{WL2}$	625	-	-	
CLK1 'HIGH' Level Width	$t_{WH1}$	1875	-	-	
CLK2 'HIGH' Level Width	$t_{WH2}$	1875	-	-	
CLK1-CLK2 Phase Difference	$t_{D12}$	625	-	-	
CLK2-CLK1 Phase Difference	$t_{D21}$	625	-	-	
CLK1, CLK2 Rise Time	$t_R$	-	-	150	
CLK1, CLK2 Fall Time	$t_F$	-	-	150	

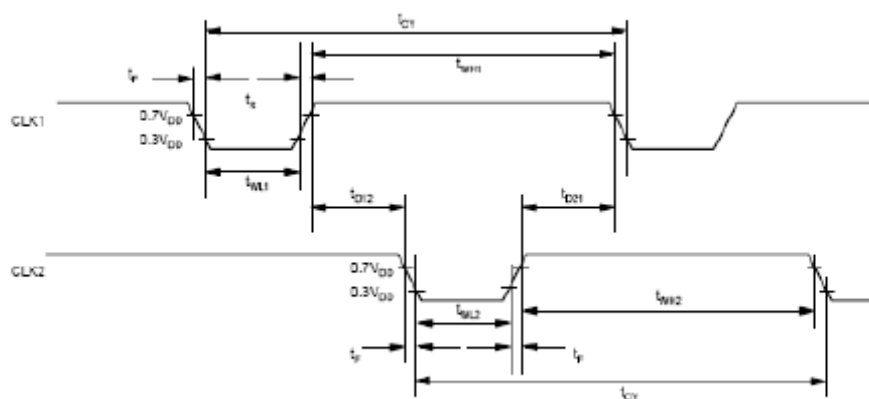


Fig4. External clock waveform

### 2. Display Control Timing

Characteristic	Symbol	Min	Typ	Max	Unit
FRM Delay Time	$t_{DF}$	-2	-	+2	$\mu$ s
M Delay Time	$t_{DM}$	-2	-	+2	$\mu$ s
CL 'LOW' Level Width	$t_{LCL}$	35	-	-	$\mu$ s
CL 'HIGH' Level Width	$t_{HCL}$	35	-	-	$\mu$ s

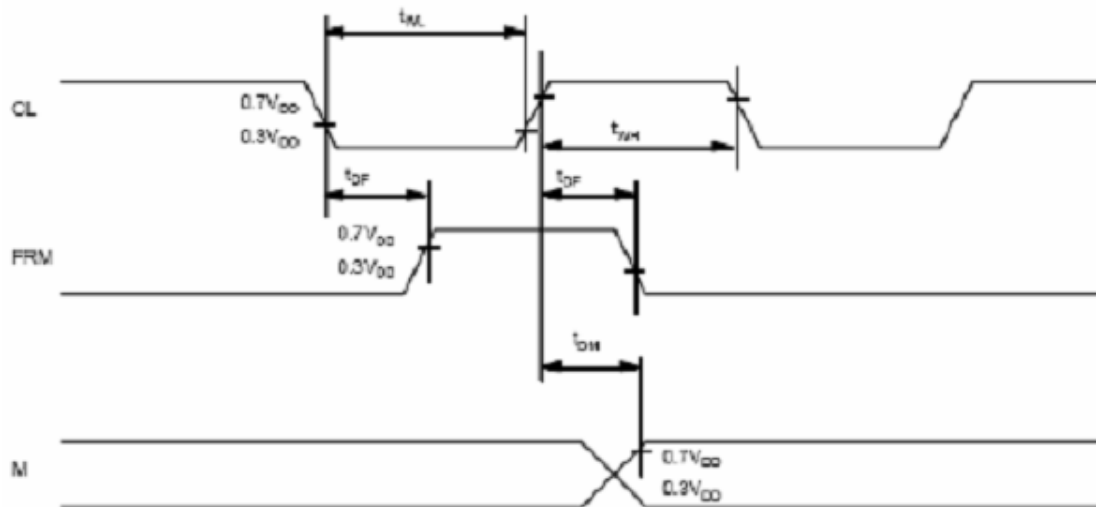


Fig 5. Display control signal waveform

### 3. MPU Interface

Characteristic	Symbol	Min	Typ	Max	Unit
E Cycle	$t_c$	1000	-	-	ns
E High Level Width	$t_{WH}$	450	-	-	ns
E Low Level Width	$t_{WL}$	450	-	-	ns
E Rise Time	$t_R$	-	-	25	ns
E Fall Time	$t_F$	-	-	25	ns
Address Set-Up Time	$t_{ASU}$	140	-	-	ns
Address Hold Time	$t_{AH}$	10	-	-	ns
Data Set-Up Time	$t_{DSU}$	200	-	-	ns
Data Delay Time	$t_D$	-	-	320	ns
Data Hold Time (Write)	$t_{DHW}$	10	-	-	ns
Data Hold Time (Read)	$t_{DHR}$	20	-	-	ns

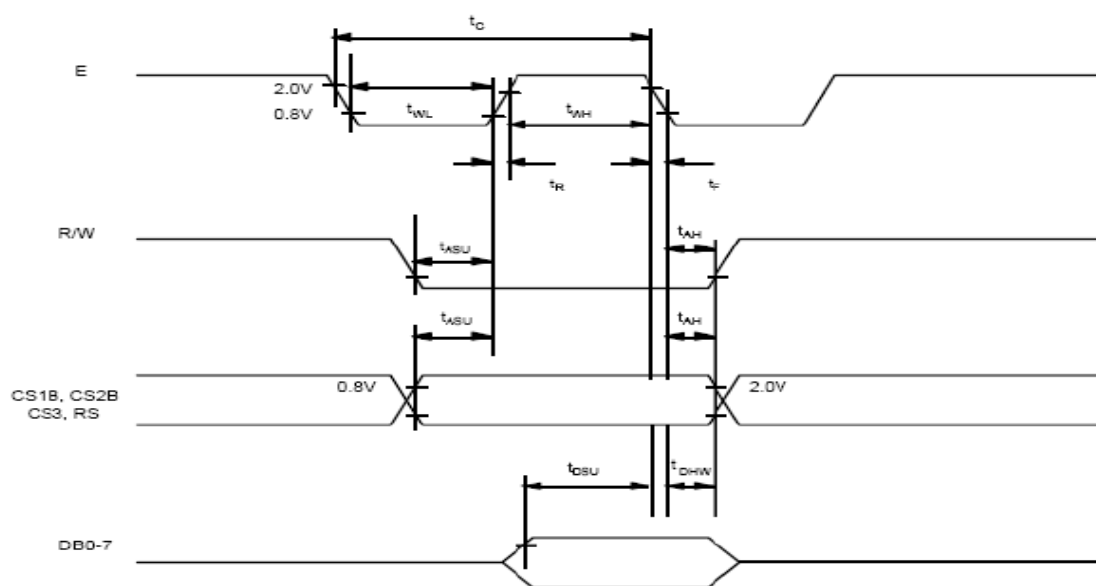


Fig 6. MPU write timing

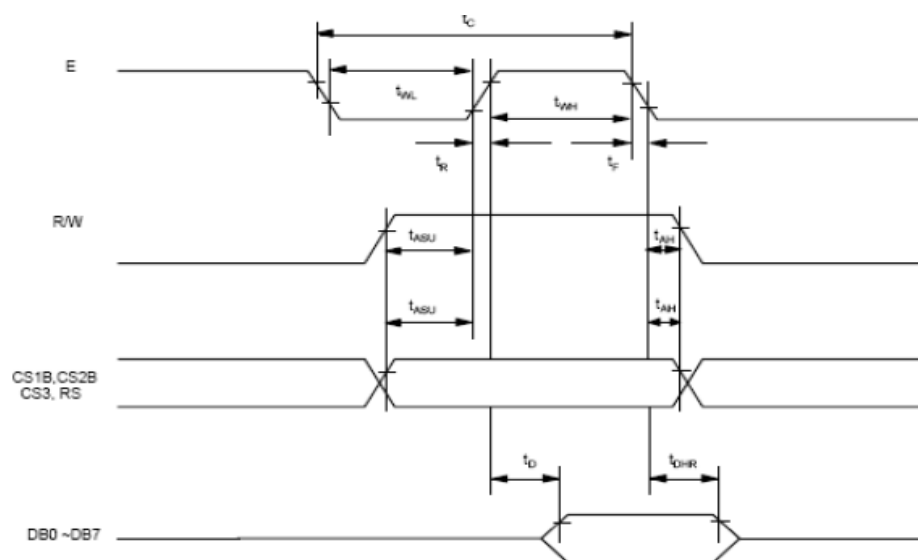
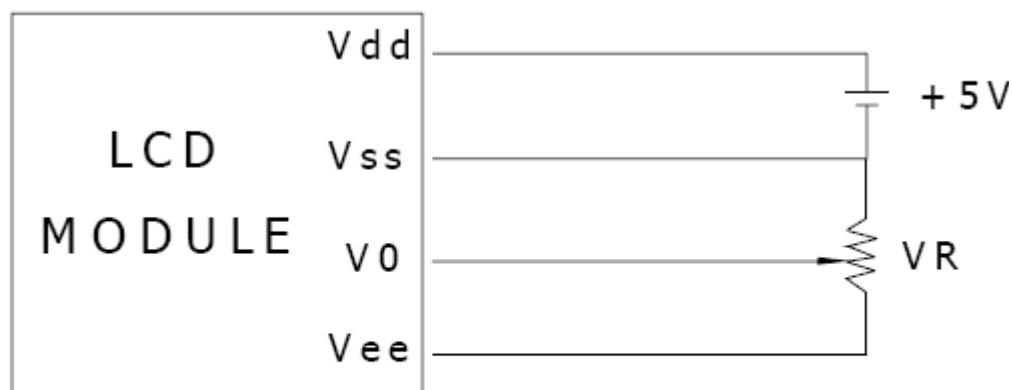
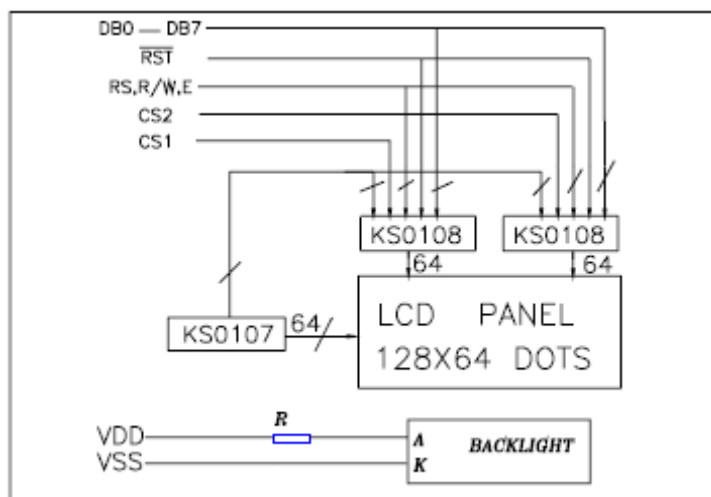


Fig 7. MPU Read timing

## 8. PIN ASSIGNMENT

PIN	SYMBOL	FUNCTION
1	Vss	Power Supply(GND)
2	Vdd	Power Supply(+5V)
3	Vo	Contrast Adjust
4	RS	H: Instruction register ; L: Data register
5	R/W	L: Write ; H: Read
6	E	Enable Signal
7-14	DB0-DB7	Data Bus
15	/CS1	Chip select for IC1.(H Active)
16	/CS2	Chip select for IC2.(H Active)
17	RESET	Reset signal
18	VEE	Negative Voltage Supply
19	K	Power Supply for LED B/L(-)
20	A	Power Supply for LED B/L(+)

## 9. BLOCK DIAGRAM



Vdd-V0: LCD Driving Voltage  
 VR: 10K - 20K

Display Control Instruction:

**Please refer to the series of KS0108B.**

## 10. OUTLINE DIMENSIONS





## 12.RELIABILITY

ITEM	CONDITIONS	CRITERION
OPERATING TEMPERATURE	HIGH TEMPERATURE +70°C 240HRS	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
	LOW TEMPERATURE -20°C 240HRS	
STORAGE TEMPERATURE	HIGH TEMPERATURE +80°C 240HRS	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
	LOW TEMPERATURE -30°C 240HRS	
HUMIDITY	40°C 90%RH 240HRS	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
VIBRATION	<ul style="list-style-type: none"> <li>• Operating Time: thirty minutes exposure for each direction (X,Y,Z)</li> <li>• Sweep Frequency: 10~55Hz (1 min)</li> <li>• Amplitude: 1.5mm</li> </ul>	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
THERMAL SHOCK	-20°C (30mins) ← → +70°C (30mins) 10 cycles	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION

\*NOTE: TEST CONDITION

(1)TEMPERATURE AND HUMIDITY: IF NO SPECIFICATION, TEMP. SET AT 25±2°C, HUMIDITY SET AT 60±5%RH

(2) OPERATING STATE: SAMPLES SUBJECT TO THE TESTS SHALL BE IN " OPERATING" CONDITION

## 13.PRECAUTION FOR USE

The following precautions should be followed, since this module contains precise parts.

- (1) Do not store module for an extended periods of time under the conditions of high temperature and high humidity.
- (2) Avoid using or storing the module in areas that expose it to direct sunlight or ultraviolet rays.
- (3) Use protective finger covers when handling the module to avoid scratching or staining the module.
- (4) Care should be taken not to expose the module to static electricity, because the module contains C-MOS LSI's.
- (5) The LSI is sensitive to light.  
The user's product should be designed so that LSI is not exposed to any light during operation.
- (6) During installation, cover the display area with acrylic protection plates to protect the polarizer plate and LCD cells.
- (7) Do not apply any excessive shocks to the module because the module contains sensitive LCD cells.  
Do not use a module, which has experienced strong mechanical shock.
- (8) Care should be taken when the power supply turns on as following.
  - (a) Do not apply any input signals before the supplying voltage is applied.
  - (b) Do not turn off the power supply while any input signals are applied.



## Caution

- (1) Dangerous. Do not shock glass because glass can break.
- (2) If module breaks, do not touch it directly.  
(Glass could stick or cut skin.)
- (3) Do not swallow Liquid Crystal.  
(In case of broken LCD panel, do not swallow liquid crystal even if there is no proof that liquid crystal is poisonous.)
- (4) If liquid crystal is exposed to skin, wash the area thoroughly with alcohol or soap.
- (5) When disposing of the product, please observe industrial waste disposal laws in each country and district.
- (6) In case of injury, give immediate treatment and consult with a doctor.
- (7) This product is constructed precisely. Don't disassemble or modify.

※ Neglecting this mark can cause injury to humans and damage to materials