



Dalian Good Display Co.,Ltd.

LCD Module User Manual

YM12864FS-655

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Dalian Good Display Co., Ltd.

Tel: +86-411-84619565

Fax: +86-411-84619585

WebSite: <http://www.good-lcd.com>



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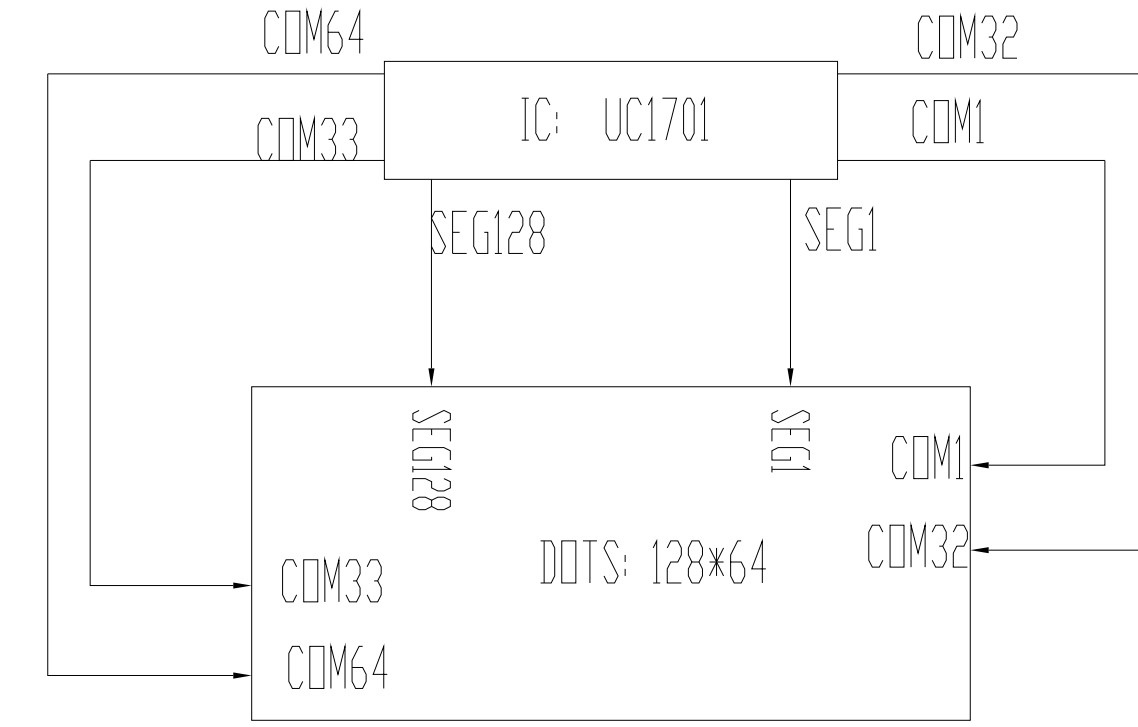


1.0 Basic Specification

1.1 Display and Mechanical Specification

ITEM	STANDARD VALUE	UNIT
Dot Matrix	128 X 64	Dots
LCD Type	FSTN / Transflective/Positive	--
LCD Duty	1/65	--
LCD Bias	1/9	Bias
Viewing Direction	6:00	Clock
Backlight Type	Edge LED Backlight with white color	--
Connecter	PIN	--
Driver IC	UC1701	--
IC Package	COG	--
Module Dimension	70.0(W) × 50.0(H) × 5.8(T) (MAX)	mm
Visual Area	67.0(W) × 37.0(H)	mm
Dot size	0.45 × 0.45	mm
Dot Pitch	0.50 × 0.50	mm
Operating Temperature	-20 ~ +70	°C
Storage Temperature	-30 ~ +80	°C

1.2 Block Diagram





1.3 Terminal Functions

Pin No.	Pin Name	I/O	Descriptions																											
1	/CS0	I	Chip Select. Chip is selected when CS0="L". When the chip is not selected, D[7:0] will be of high impedance.																											
2	RST	I	When RST=L, all control registers are re-initialized by their default states. When RST is not used, connect the pin to VDD																											
3	CD	I	Select Control data or Display data for read/write operation. "H" : Display data "L" : Control data																											
4	WR0	I	WR[1:0] controls the read/write operation of the host interface. In parallel mode, the meaning of WR[1:0] depends on which interface it is in, 6800 or 8080 mode. In serial interface modes, these two pins are not used, connect them to VSS or VDD.																											
5	WR1	I	WR[1:0] controls the read/write operation of the host interface. In parallel mode, the meaning of WR[1:0] depends on which interface it is in, 6800 or 8080 mode. In serial interface modes, these two pins are not used, connect them to VSS or VDD.																											
6~13	D0~D7	I/O	Bi-directional bus for both serial and parallel host interface. In serial modes, connect D[7] to SDA, D[6] to SCK. <table border="1" style="margin-left: 20px;"> <tr> <td></td> <td>D7</td> <td>D6</td> <td>D5</td> <td>D4</td> <td>D3</td> <td>D2</td> <td>D1</td> <td>D0</td> </tr> <tr> <td>BM=1x</td> <td>DB7</td> <td>DB6</td> <td>DB5</td> <td>DB4</td> <td>DB3</td> <td>DB2</td> <td>DB1</td> <td>DB0</td> </tr> <tr> <td>BM=0x</td> <td>SDA</td> <td>SCK</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> <td>--</td> </tr> </table> <p>Always connect unused pins to either VSS or VDD</p>		D7	D6	D5	D4	D3	D2	D1	D0	BM=1x	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0	BM=0x	SDA	SCK	--	--	--	--	--	--
	D7	D6	D5	D4	D3	D2	D1	D0																						
BM=1x	DB7	DB6	DB5	DB4	DB3	DB2	DB1	DB0																						
BM=0x	SDA	SCK	--	--	--	--	--	--																						
14	VDD	P	Positive Power Supply																											
15	VSS	P	Negative Power Supply, Ground(0V)																											
16	VB0+	PWR	LCD Bias Voltages.																											
17	VB0-																													
18	VB1-																													
19	VB1+																													
20	VLCD	PWR	Main LCD Power Supply.																											
21~22	BM0 BM1	I	Bus mode: The interface bus mode is determined by BM[1:0] and {D7, D6} by the following relationship: <table border="1" style="margin-left: 20px;"> <tr> <td>BM[1:0]</td> <td>{D7, D6}</td> <td>Mode</td> </tr> <tr> <td>11</td> <td>Data</td> <td>6800/8-bit</td> </tr> <tr> <td>10</td> <td>Data</td> <td>8080/8-bit</td> </tr> <tr> <td>0x</td> <td>SDA, SCK</td> <td>4-wire SPI w/8-bit token (S8: converional)</td> </tr> </table>	BM[1:0]	{D7, D6}	Mode	11	Data	6800/8-bit	10	Data	8080/8-bit	0x	SDA, SCK	4-wire SPI w/8-bit token (S8: converional)															
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1.4 Mechanical Drawing

REV.	DESCRIPTION	REVISER	DATE
A0	New drawing	xiaoyun	2011.03.04

Signature: _____ **Date:** _____

COM & SEG LAYOUT

DOTS DETAIL

BACKLIGHT CIRCUIT

UNSPECIFIED TOLERANCES:	UNITS: mm	DATE:	MODEL NUMBER:
±0.20	mm	2011.03.04	YM12 864FS-655
DESIGN BY:	BY:	2011.03.04	SHEET: 1 Of 1
CHECKED BY:	SOP	2011.03.04	DATE: 2011.03.04
APPROVED BY:	DO NOT SCALE THIS DRAWING.		

Specifications:

- Display Mode: FSTN, Transmissive/Positive.
- Viewing Angle: 6 O'clock.
- Drive Method: 1/65 Duty 1/9 Bias, Vop=9.2V, Vdd=3.3V.
- Top: -20°C~+70°C, Tst: -30°C~+80°C.
- Connector: LCD+PIN.
- Backlight: 4PCS White LED Side Backlight; If=60mA & Vf=3.3(Vp).
 Chroma: X=0.27~0.33, Y=0.27~0.33; Luminance: Min 200cd/m²(BACKLIGHT).
 Uniformity: Min 70%.
- Drive IC: UC1701.
- RoHS Compliant: Yes.
- With * * * Mark Dimensions Are Important Dimensions.



2. Absolute Maximum Ratings

Items	Symbol	Min	Max.	Unit	Condition
Supply Voltage (Logic)	V_{DD-VSS}	0.3	+4.0	V	$V_{SS}=0V$
Supply Voltage (LCD Driver)	V_{LCD}	0.3	+13.2	V	Relative to V_{SS}
Input Voltage	V_{IN}	-0.4	$V_{DD}+0.3$	V	$V_{SS}=0V$
Operating Temperature	T_{OP}	0	+50	°C	No Condensation
Storage Temperature	T_{ST}	-10	+60	°C	No Condensation

Cautions:

Any stresses exceeding the Absolute Maximum Ratings may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.

3. Electrical Characteristics

3.1 DC Characteristics

Items	Symbol	Min	Typ.	Max.	Unit	Condition
Supply Voltage (Logic)	V_{DD-VSS}	3.0	3.3 3.6		V	
Supply Voltage (LCD Driver)	V_0	--	--		V	25°C
		--	9.2 --			
		--	--			
Input Voltage	V_{IH}	$0.8 V_{DD}$	--	V_{DD}	V	APPLICABLE *1
	V_{IL}	V_{SS}	--	$0.2 V_{DD}$		
Dynamic Consumption Current	I_{DD}	--	--	0.3	mA	$V_{DD-VSS}=3.0V$ High-PowerMode

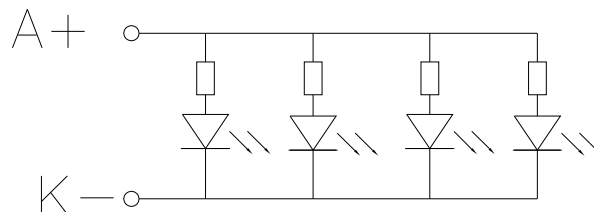
*1 The A0, D0 to D5, D6 (SCL), D7 (SI), /RD (E), /WR (R/W), /CS1, CS2, CLS, CL, FR, M/S, C86, P/S, /DOF, /RES, IRS, and/HPM terminals.

3.2 LED Backlight Circuit Characteristics

Items	Symbol	MIN	TYP.	MAX.	Unit	Application pin
Forward Voltage	V_{fLED+}	-	3.0	-	V	LED+
Forward Current	I_{fLED+}	-	60	80	mA	LED+

Cautions:

Exceeding the recommended driving current could cause substantial damage to the backlight and shorten its lifetime.



No. of LED = 1 x 4 = 4 SMD



4. IC Contents Attachment:

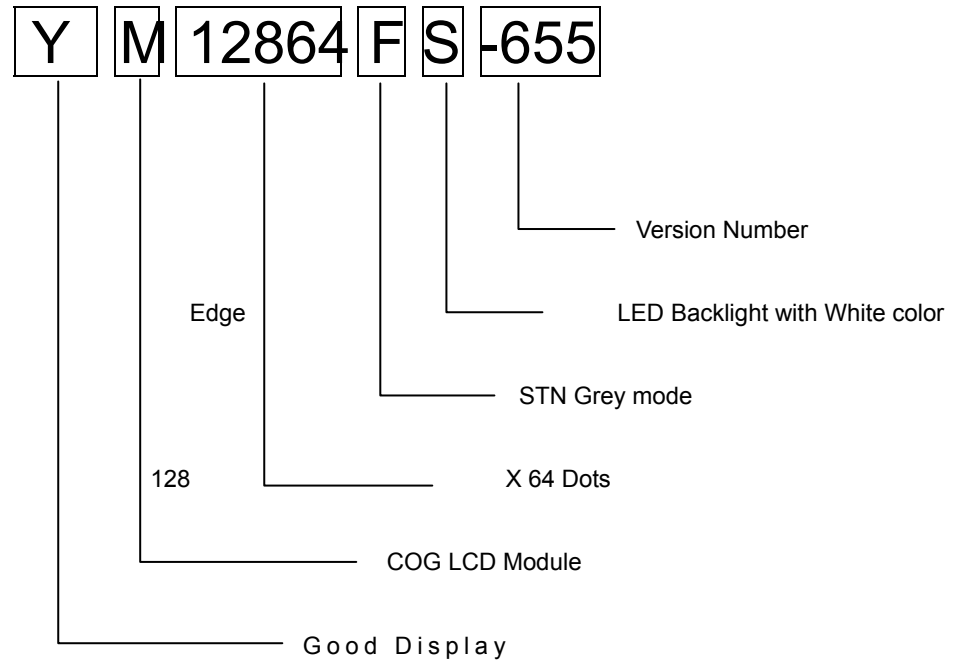
Reference Documents From Ultrachip UC1701 Driver with

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UC1701 (Version 1.0)	Page
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5. LCM Numbering System





6. Design and Handling Precaution

- 1.0 The LCD panel is made by glass. Any mechanical shock (eg. dropping from high place) will damage the LCD module.
- 2.0 Do not add excessive force on the surface of the display, which may cause the Display color change abnormally.
- 3.0 The polarizer on the LCD is easily get scratched. If possible, do not remove the LCD protective film until the last step of installation.
- 4.0 Never attempt to disassemble or rework the LCD module.
- 5.0 Only Clean the LCD with Isopropyl Alcohol or Ethyl Alcohol. Other solvents (eg. water) may damage the LCD.
- 6.0 When mounting the LCD module, make sure that it is free from twisting, warping and distortion.
- 7.0 Ensure to provide enough space (with cushion) between case and LCD panel to prevent external force adding on it, or it may cause damage to the LCD or degrade the display result.
- 8.0 Only hold the LCD module by its side. Never hold LCD module by adds force on the heat seal or TAB.
- 9.0 Never add force to component of the LCD module. It may cause invisible damage or degrade of the reliability.
- 10.0 LCD module could be easily damaged by static electricity. Be careful to maintain an optimum anti-static work environment to protect the LCD module.
- 11.0 When peeling off the protective film from LCD, static charge may cause abnormal display pattern. It is normal and will resume to normal in a short while.
- 12.0 Take care and prevent get hurt by the LCD panel sharp edge.
- 13.0 Never operate the LCD module exceed the absolute maximum ratings.
- 14.0 Keep the signal line as short as possible to prevent noisy signal applying to LCD module.
- 15.0 Never apply signal to the LCD module without power supply.
- 16.0 IC chip (eg. TAB or COG) is sensitive to the light. Strong lighting environment could Possibly cause malfunction. Light sealing structure casing is recommend.
- 17.0 LCD module reliability may be reduced by temperature shock.
- 18.0 When storing the LCD module, avoid exposure to the direct sunlight, high humidity, high temperature or low temperature. They may damage or degrade the LCD module