

UL770

1A1H 12Vdc AD Board

Model No.	UL770	Document No.	
Revised No.	0.1	Issued Date.	2016/11/23

Reversion History:

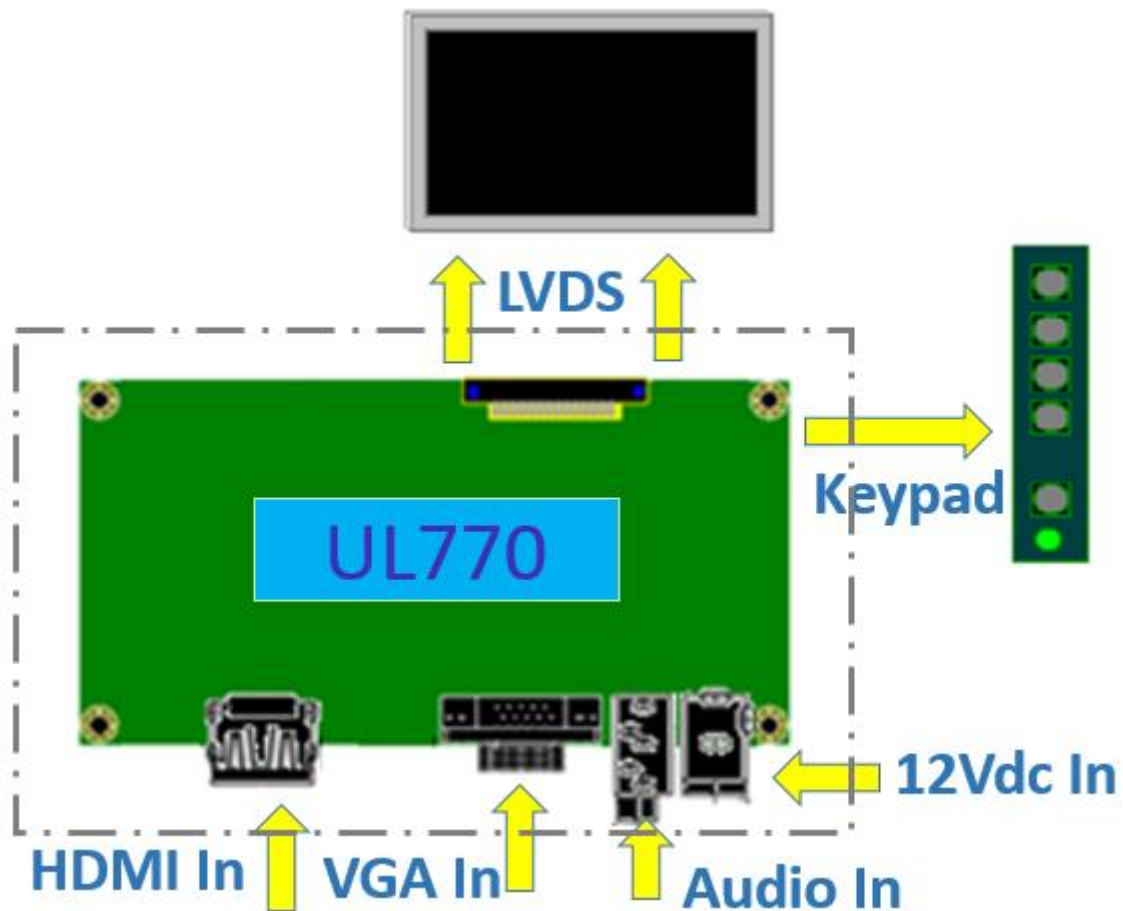
Reversion	Date	Notes
0.1	2016/11/23	1 st Release

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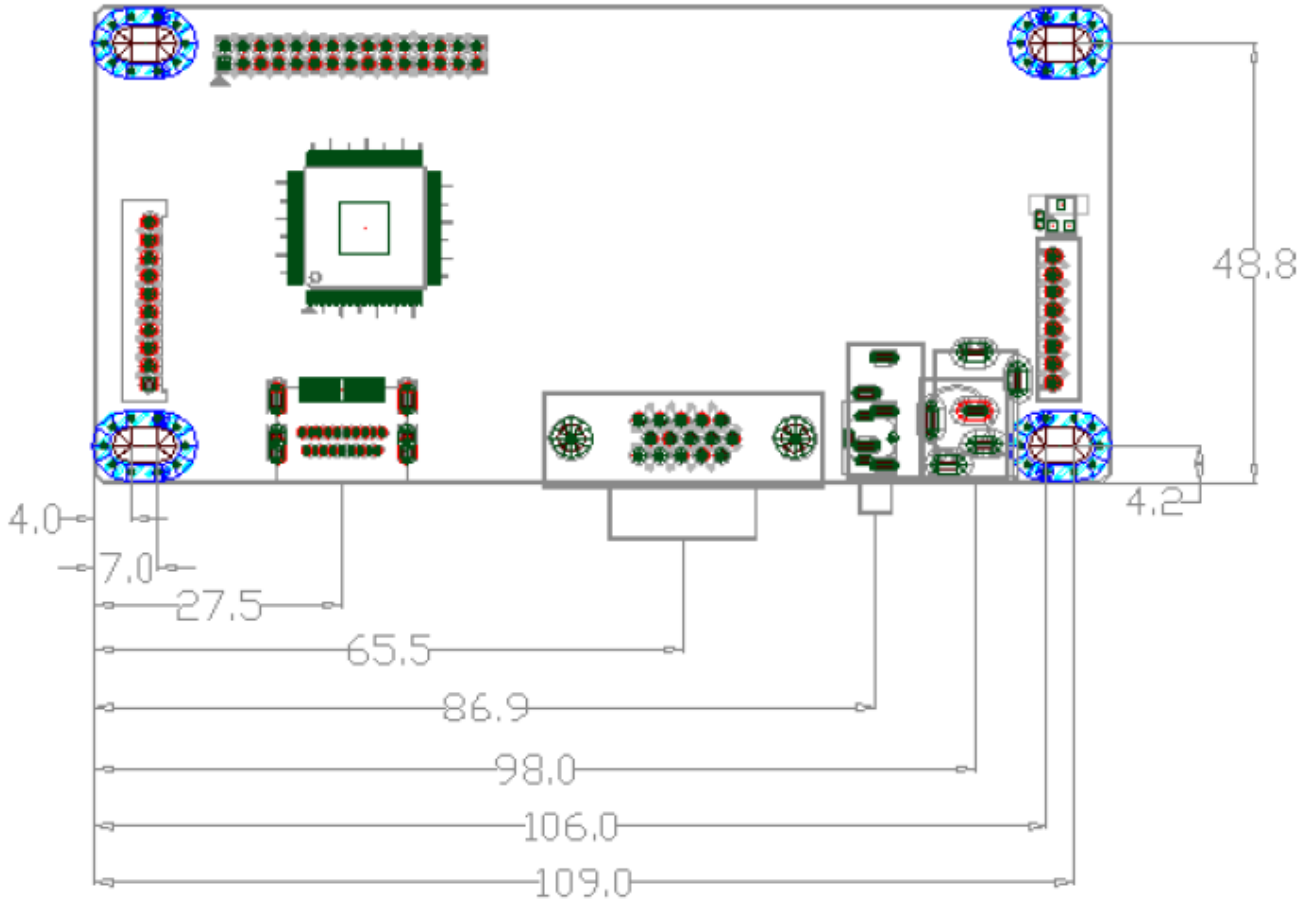
一. 產品概述

UL770 是盟訊科技全新推出的液晶顯示器驅動板產品，適用面板尺寸在6.4吋到47吋之間，介面類型為LVDS的各廠牌液晶顯示屏，同時具備類比R、G、B和 HDMI信號的輸入，可輸出的最高解析度為WUXGA+。同時，ULL770支援音訊放大功能，提供2x2W輸出功率，可由 Keypad 按鍵調節音量大小；包含精美的OSD介面，以及多種可供選擇的OSD語言。



二. 功能與規格

1. 尺寸說明(單位：mm):



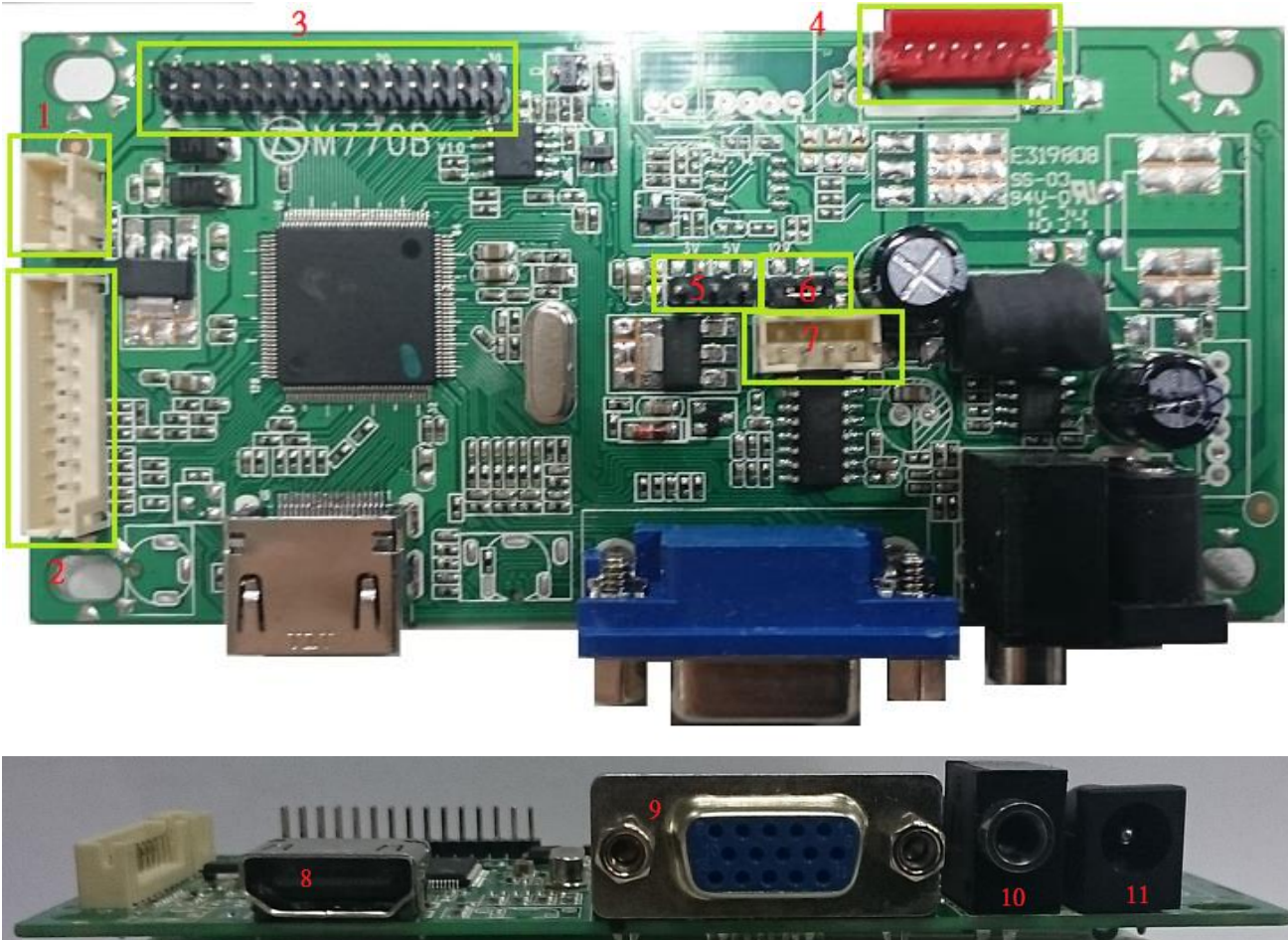
2.電子規格

板厚:1.2 mm 兩層板 單面上件

輸入電源	DC IN: 12V		
Panel	Single/ Dual LVDS up to 1920x1200		
	LVDS 訊號	30PIN 雙排排針式輸出	
	供電	3.3V 、5V、12V 可供選擇	利用板上 Jumper 選擇
背光	開關	有	ON/OFF by FW control
	調光方式	有	PWM 調光
	供電	12V	
輸入訊號	VGA 端子	DB15 90 度端子	
	HDMI 端子	HDMI Female connector	
	Audio	3.5mm phone jack	
輸出訊號	Speaker	4PIN / 2.0mm wafer connector / 2x2W (8Ω)	
其它功能	待機功耗 < 1W		
	5V 電源輸出		
KeyPad	對外指示燈號輸出，對外接受按鍵 5 組		

三. 板子與各端子說明

3.1 端子位置



- 1 • IR receiver connector
- 2 • KeyPAD (按鍵) 輸入
- 3 • LVDS 排針式(pin header)輸出
- 4 • 背光電源與控制訊號輸出 Backlight Power Output and control
- 5 • PANEL VCC Selection → 3.3V or 5V
- 6 • PANEL VCC Selection → 12V
- 7 • 音頻輸出
- 8 • HDMI 輸入端子
- 9 • VGA 輸入端子
- 10 • 音頻輸入
- 11 • DC Power IN (DC 12V 電源輸入)

3.2 插座說明

(1) IR Receiver 箭頭處為 PIN1



PIN1	PIN2	PIN3
IR	GND	5V

(3) . KeyPAD (按鍵) 輸入, 箭頭處為 PIN1



PIN No.	PIN 1	PIN 2	PIN 3	PIN 4	PIN 5	PIN 6	PIN 7	PIN 8	PIN9	PIN10
Sch Name	Key 0	LED R	LED G	GND	Key 1	Key2	Key 3	Key 4	No Supply	No Supply
對應 function	POWER	紅色燈號	綠色燈號	GND	Up	Down	Auto	Menu	No Supply	No Supply

(3) . CN8 : LVDS 排針式(pin header)輸出...箭頭處為 PIN 1 , 信號排列如下表:



PIN 2	PIN 4	PIN 6	PIN 8	PIN 10	PIN 12	PIN 14	PIN 16	PIN 18	PIN 20	PIN 22	PIN 24	PIN 26	PIN 28	PIN 30
LCD-VDD	GND	GND	TX00+	TX01+	TX02+	GND	TXOC+	TXO3+	TXE0+	TXE1+	TXE2+	GND	TXEC+	TXE3+
PIN 1	PIN 3	PIN 5	PIN 7	PIN 9	PIN 11	PIN 13	PIN 15	PIN 17	PIN 19	PIN 21	PIN 23	PIN 25	PIN 27	PIN 29
LCD-VDD	LCD-VDD	GND	TX00-	TX01-	TX02-	GND	TXOC-	TXO3-	TXE0-	TXE1-	TXE2-	GND	TXEC-	TXE3-

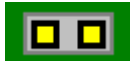
(4) . 背光電源與訊號輸出 , 下圖箭頭表 PIN1



PIN1	PIN2	PIN3	PIN4	PIN5	PIN6
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12V	12V	BL EN	BL ADJ	GND	GND
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(5 & 6). Panel 電源選擇



Panel 電源為 **3V** 時



Panel 電源為 **5V** 時



Panel 電源為 **12V** 時

(7) . CN7:音頻輸出,箭頭處為 PIN1

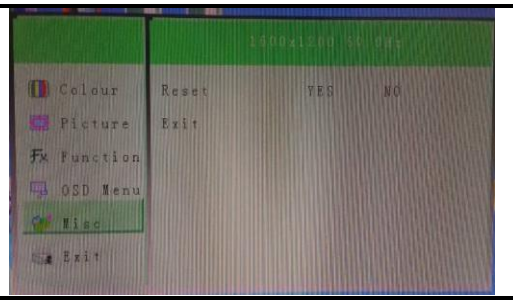


PIN1	PIN2	PIN3	PIN4
LOUT+	LOUT-	ROUT-	ROUT+

四. OSD 功能表說明

功能選單	色彩調整 Colour 	對比度 Contrast	0~100
		亮度 Brightness	0~100
		色溫 Colour Temp	9300K 6500K User
		離開選單 Exit	離開選單
	影像調整 Picture 	水平位置 H. Position	0~100
		垂直位置 V. Position	0~100
		相位 Phase	0~100
		時脈 Clock	0~100
		銳利度 Sharpness	1 2 3 4 5
		離開選單 Exit	離開選單
	自動校正 Function 	自動影像調整 Auto Adjust	是 否
		自動色彩調整 Auto Colour	是 否
	離開選單 Exit	離開選單	
選單調整 OSD Menu 	語言選擇 Language	8 國語言	
	選單水平位置 OSD H. Pos	0~100	
	選單垂直位置 OSD V. Pos	0~100	
	選單時間 OSD Timer	ON OFF	
	離開選單 Exit	離開選單	
其它 Misc	重置 Reset	是 否	



		離開選單 Exit	離開選單
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五. Main Chip Features

NT68770UFG

Features:

Analog Graphic Input

- Support RGB WUXGA 1920x1200@60, 2048x1152@60hz input for NT68770
- Triple 8bit 500Mhz ADCs (0.55 ~ 0.9V) Bandwidth
- 205Mhz HPLL with 64 steps phase Adjust for RGB channel in NT68770
- Sync. Processor for H/V Sync. Measurement with SOG support
- Supports both non-interlaced and interlaced input signals
- Support ADC offset dither

Digital Graphic Input

- Integrated Single Link TMDS Receiver up To 225MHz deep color mode
- Support HDCP V1.1 compliant
- Support HDMI V1.3 8/10/12/16 bit deep color mode. resolutions up to 1080p @ 60Hz
- Compliant with 8CH audio decode with selectable 2CH audio output
- Build in H/W CEC controller
- HDMI support Adobe color space.
- Embedded HDCP key

Video Processing

- Zoom and shrink engine with non-linear scaling in horizontal direction for wide screen panels
- The 4rd generation Bright Frame with adaptive contrast control, 24 color tones adjustment , sRGB real color engine and edge enhancement functions
- Support Linear & Non-linear 4/8/16/32 Segment Histogram & I-Gamma Curve
- Adjustable sharpness setting
- Built-in 2D Noise reduction function and noise meter
- Dynamic ghost/ ringing reduction filter
- Dynamic backlight and local dimming control for ultra-high contrast and power saving
- Advance dithering enhancement for smoothing gray object that support 16.7M color
- Pre-gamma and Rev-gamma with 16bits resolution
- Post- gamma with 10bits x 256 SRAM
- Super resolution function that enhance the details of low resolution image (support input resolution up to 1920x1200)

Sync Processor

- SOG input share with G+ pin
- Support TTL Sync-On-Green (SOG) , (Including Sync Slicer)

Polarity detection

Frequency measurement

Fast mode change detection

Interlace or non-interlace input detection

Separate or composite sync auto switching (including Sync Separator)

Internal OSD

Programmable multi-color RAM font as well as a bitmapped graphical OSD are supported

Provide 1,2,3,4 bits/pixel RAM Fonts

Optional 10x18, 12x18, 10x16, 12x16 dot matrix

Internal SRAM allows up to 8192 characters, with programmable OSD frame size. Width is 256 column, and Height is 64 row

Programmable shadow or border control for each character by each row

Programmable blinking effects for each character

Spacing control to avoid expansion distortion

Supports simultaneous display of up to 8 OSD windows

Maximum 8 times of global zoom for horizontal and vertical axis

Support flexible FG or BG optional transparent, translucent, and opaque effects

256 palette with 64K color selectable

Top-bottom flip, left-right mirror and 90 degree / 270 degree rotated

Flexible fade-in, fade-out effect

Splitting OSD frame supported

Gradient fade-in/fade - out

Insert variable space by row

Pixel base adjustment for window size control.

Up to 18K byte RAM size (6Kx24bits)

Display Output

8/6 bit single/dual port WUXGA ,LVDS panels

LVDS Dual port support up to 200MHz (AC spec).

All of output keep “Low” after power up

Audio Output

1 Channel R/L analog output for external amplifier

1 S/PDIF digital output

1 I2S digital output for external amplifier

100 steps audio volume control and PGA modulation to 200 steps

Built-in Dual Pixel LVDS Transmitter

Integrate the Dual Port, 4 Data Channel and Clock-Out Low-Voltage differential LVDS transmitter to supports single or dual pixel 6/8-bit display data transmission

Suited for single pixel VGA, SVGA, XGA and dual pixel SXGA, WSXGA, WUXGA(NT68770 only) display transmission from controller to display with low EMI

SSC new mode

Embedded Microcontroller

External SPI flash IF (Support flash size up to 8Mbits)

4 Hardware DDC ports

Provide 3 timers for software application.

Low power detector function

Support SSC function

LED driver control

0.2MHz to 1MHz programmable switching frequency

Drives up to 4 LED strings

Accurate dimming control use internal interface

LED current adjustable from 1~140mA via register control

500:1 dimming ratio at 250Hz

Keep unused LED string floating

Over/under voltage, current, temperature protection

LED string short /open protection

Soft-start protection

Power MOSFET over current protection

Status and control via registers

Scaler integration LED driver

Misc.

Build In 3.3V to 1.2V LDO for ADC and all digital block

Power

3.3V/1.2V power supply

Support Ultra-Low Power Standby Mode.

Package

LQFP 128 pin

六. Revision History

版本	變更內容	變更時間
Ver. A	初版	2016/11/22

* The specification file may updated without notice.