

Compulab

7" open frame LCD display

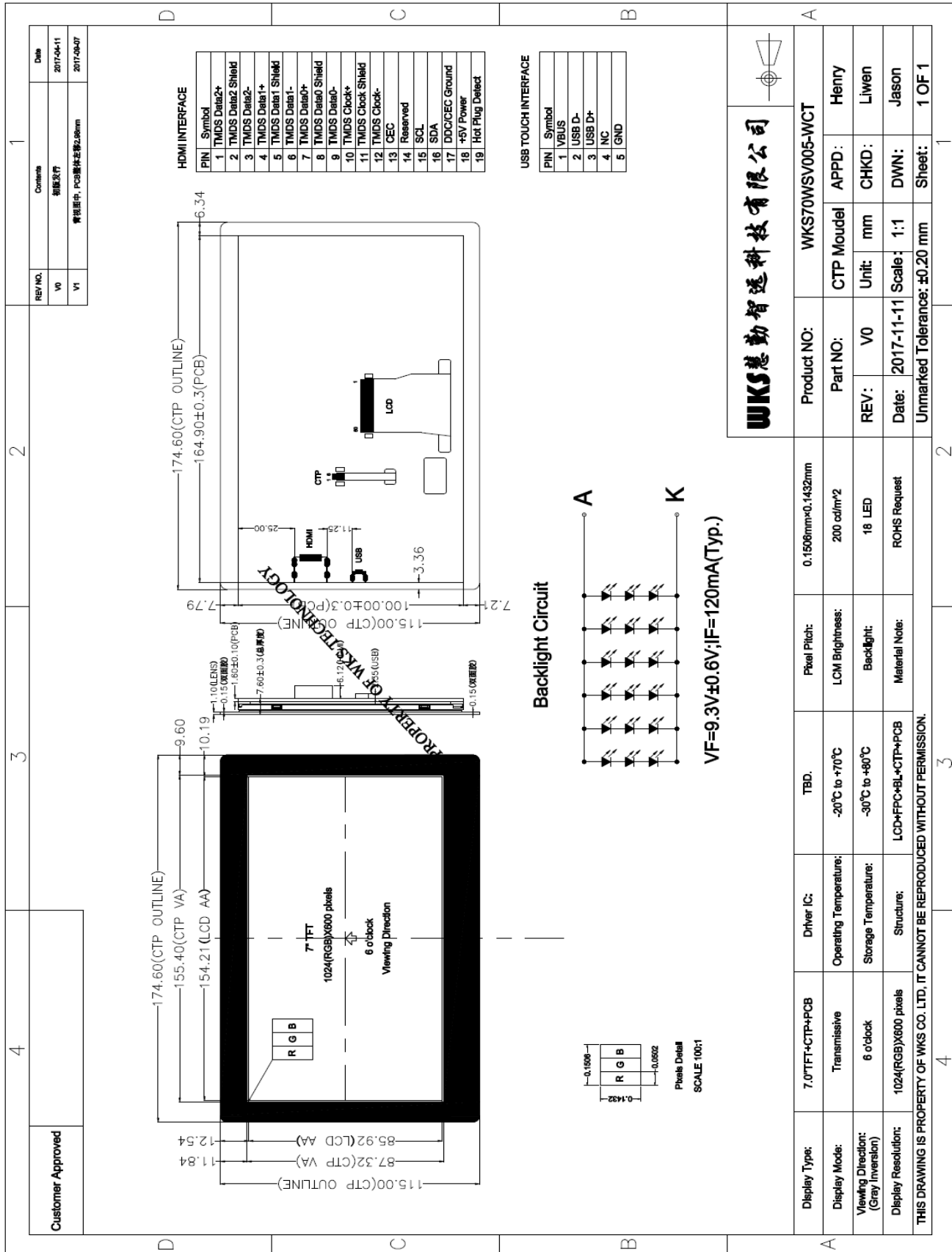
part number **ACCENC-LCD7**

Specifications

1. GENERAL INFORMATION

Item of general information	Contents		Unit
LCD Display Size(Diagonal)	7		inch
Module Structure	LCD Display + CTP Touch + PCB		-
LCD Display Type	TFT/TRANSMISSIVE		-
LCD Display Mode	Normally White		-
Recommended Viewing Direction	12		o'clock
Gray inversion Direction	6		o'clock
Module size (W×H×T)	174.60×115.00×7.60		mm
Active area (W×H)	154.21×85.92		mm
Number of pixels(Resolution)	1024RGB×600		pixel
Pixel pitch (W×H)	0.1506×0.1412		mm
Color Pixel Arrangement	RGB Stripe		-
Module Interface Type	LCD Display	HDMI interface	-
	CTP Touch	USB interface	-
System Support	Windows 10		-
	Linux		-
Power Supply	USB(5.0V)		-
Module Power consumption	480(Typ.)		mA
Color Numbers	16.7M		-
Backlight Type	White LED		-

2. EXTERNAL DIMENSIONS



3. ABSOLUTE MAXIMUM RATINGS

Parameter of absolute maximum ratings	Symbol	Min	Max	Unit
Operating temperature	Top	-20	70	°C
Storage temperature	Tst	-30	80	°C
Humidity	RH	-	90%(Max 60°C)	RH

Note: Absolute maximum ratings means the product can withstand short-term, not more than 120 hours. If the product is a long time to withstand these conditions, the life time would be shorter.

4. ELECTRICAL CHARACTERISTICS (DC CHARACTERISTICS)

Parameter of DC characteristics	Symbol	Min.	Typ.	Max.	Unit
PCB operating voltage	VUSB	-	5.0	-	V
LCD I/O operating voltage	VDD	3.0	3.3	3.6	V
Input voltage 'H' level	VIH	0.7*VDD	-	VDD	V
Input voltage 'L' level	VIL	VSS	-	0.3*VDD	V
Output voltage 'H' level	VOH	VDD-0.4	-	VDD	V
Output voltage 'L' level	VOL	VSS	-	VSS+0.4	V

5. CTP CHARACTERISTICS

Item of CTP characteristics	Specification	Unit	Remark
Panel Type	Glass Cover + Glass Sensor	-	-
Resolution	1024 × 600	pixel	-
Surface Hardness	≥6H	-	-
Transparency	> 82%	-	-
Driver IC	-	-	-
Interface Type	USB	-	-
Support Points	5	-	-
Sampling Rate	20~100	Hz	-
Supply voltage	3.3	V	-

6. ELECTRO-OPTICAL CHARACTERISTICS

Item of electro-optical characteristics		Symbol	Condition	Min.	Typ.	Max.	Unit	Remark	Note
Response time		Tr+Tf	$\theta=0^\circ$ $\varphi=0^\circ$ Ta=25°C	-	25	40	ms	FIG 1.	4
Contrast Ratio		CR		-	320	-	-	FIG 2.	1
Luminance uniformity		Δ WHITE		-	80	-	%	FIG 2.	3
Surface Luminance		Lv		-	200	-	cd/m2	FIG 2.	2
CIE (x, y) chromaticity	White	White x	$\theta=0^\circ$ $\varphi=0^\circ$ Ta=25°C	-	0.302	-	-	FIG 2.	5
		White y		-	0.338	-			
	Red	Red x		-	0.606	-			
		Red y		-	0.325	-			
	Green	Green x		-	0.303	-			
		Green y		-	0.567	-			
	Blue	Blue x		-	0.147	-			
		Blue y		-	0.161	-			
Viewing angle range	$\varphi=90$ (12 o'clock)		CR ≥ 10	-	60	-	deg	FIG 3.	6
	$\varphi=270$ (6 o'clock)			-	70	-	deg		
	$\varphi=0$ (3 o'clock) φ			-	80	-	deg		
	$\varphi=180$ (9 o'clock)			-	80	-	deg		
NTSC ratio		-	-	-	50	-	%	-	-

Note 1. Contrast Ratio(CR) is defined mathematically by the following formula. For more information see FIG 2.:

$$\text{Contrast Ratio(CR)} = \frac{\text{Average Surface Luminance with all white pixels}(P1, P2, P3, P4, P5, P6, P7, P8, P9)}{\text{Average Surface Luminance with all black pixels}(P1, P2, P3, P4, P5, P6, P7, P8, P9)}$$

Note 2. Surface luminance is the LCD surface from the surface with all pixels displaying white. For more information see FIG 2.

Lv=Average Surface Luminance with all white pixels (P1,P2,P 3,P4, P5,P6,P7,P8,P9)

Note 3. The uniformity in surface luminance (Δ WHITE) is determined by measuring luminance at each test position 1 through 9, and then dividing the maximum luminance of 9points luminance by minimum luminance of 9 points luminance. For more information see FIG 2.

$$\Delta\text{WHITE} = \frac{\text{Minimum Surface Luminance with all white pixels}(P1, P2, P3, P4, P5, P6, P7, P8, P9)}{\text{Maximum Surface Luminance with all white pixels}(P1, P2, P3, P4, P5, P6, P7, P8, P9)}$$

Note 4. Response time is the time required for the display to transition from White to black(Rise Time, T_r) and from black to white(Decay Time, T_f). For additional information see FIG 1.

Note 5. CIE (x, y) chromaticity ,The x,y value is determined by screen active area position 5. For more information see FIG 2.

Note 6. Viewing angle is the angle at which the contrast ratio is greater than a specific value. For TFT module, the specific value of contrast ratio is 10.The angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG 3.

Note 7. For Viewing angle and response time testing, the testing data is base on Autronic-Melchers's ConoScope. Series Instruments. For contrast ratio, Surface Luminance, Luminance uniformity and CIE, the testing data is base on BM-7 photo detector.

Note 8. For TN type TFT transmissive module, Gray scale reverse occurs in the direction of panel viewing angle.

FIG.1. The definition of Response Time

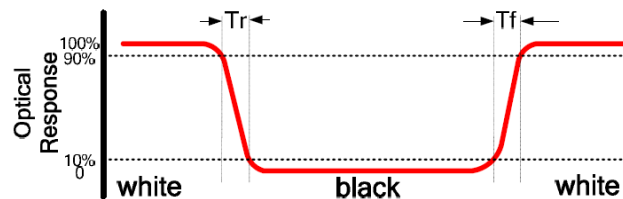


FIG.2. Measuring method for Contrast ratio, surface luminance, Luminance uniformity, CIE (x , y) chromaticity

A : $H/6$;

B : $V/6$;

H,V : Active Area(AA) size

Measurement instrument: BM-7; Light spot size=5mm, 350mm distance from the LCD surface to detector lens.

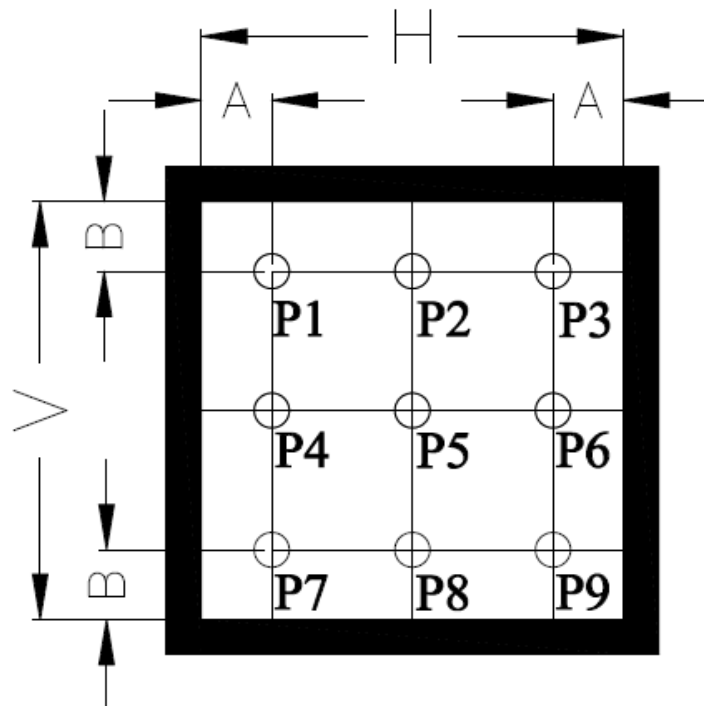
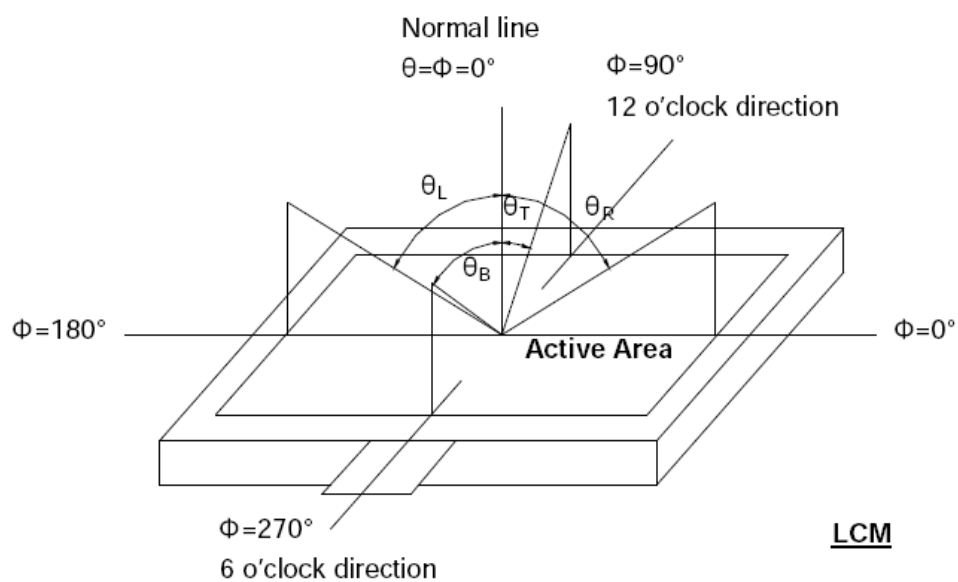


FIG.3. The definition of viewing angle



7. INTERFACE DESCRIPTION

A. HDMI Interface Description

NO.	Symbol	DESCRIPTION
1	TMDS Data2+	Positive side of channel 2 TMDS low-voltage signal differential input pair
2	TMDS Data2 Shield	Ground
3	TMDS Data2-	Negative side of channel 2 TMDS low-voltage signal differential input pair
4	TMDS Data1+	Positive side of channel 1 TMDS low-voltage signal differential input pair
5	TMDS Data1 Shield	Ground
6	TMDS Data1-	Negative side of channel 1 TMDS low-voltage signal differential input pair
7	TMDS Data0+	Positive side of channel 0 TMDS low-voltage signal differential input pair
8	TMDS Data0 Shield	Ground
9	TMDS Data0-	Negative side of channel 0 TMDS low-voltage signal differential input pair
10	TMDS Clock+	Positive side of reference clock. TMDS low-voltage signal differential input pair
11	TMDS Clock Shield	Ground
12	TMDS Clock-	Negative side of reference clock. TMDS low-voltage signal differential input pair
13	CEC	No Connection
14	Reserved(N.C.)	No Connection
15	SCL	DDC SCL
16	SDA	DDC SDA
17	DDC/CEC Ground	Ground
18	+5V Power	+5V Power
19	Hot Plug Detect	Hot Plug Detect

B. USB Interface Description

NO.	Symbol	DESCRIPTION
1	VUSB	USB Power
2	D-	USB Data-
3	D+	USB Data+
4	NC	No connection
5	GND	Power Ground

Note: Please connect the USB first, and then connect the HDMI interface.

8. LCD TIMING

Horizontal input Timing table

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency@ Frame rate=60Hz	DCLK	44.9	51.2	63	MHz
Horizontal display area	thd	1024			DCLK
1 Horizontal Line	th	1200	1344	1400	DCLK
HSYNC pulse width	thpw	1	-	140	DCLK
HSYNC Blanking	thb	160	160	160	DCLK
HSYNC Front Porch	thfp	16	160	216	DCLK
Vertical display area	tvd	600			H
VSYNC period time	tv	624	635	750	H
VSYNC pulse width	tvpw	1	-	20	H
VSYNC Blanking	tvb	23	23	23	H
VSYNC Front Porch	tvfp	1	12	127	H

Vertical input Timing table

Parameter	Symbol	Value			Unit
		Min.	Typ.	Max.	
DCLK frequency@ Frame rate=60Hz	DCLK	40.8	51.2	67.2	MHz
Horizontal display area	thd	1024			DCLK
HSYNC period time	th	1114	1344	1400	DCLK
HSYNC Blanking	thb + thfp	90	320	376	DCLK
Vertical display area	tvd	600			H
VSYNC period time	tv	610	635	800	H
VSYNC Blanking	tvb + tvfp	10	35	200	H