AN7000 7 "Screen User Manual

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1. 7 Inch LCD Screen Module Description

The ALINX 7-inch LCD module (AN7000) adopts IVO's 7-inch TFT LCD screen, the LCD screen model is M070AWAD R0. AN7000 LCD screen module is composed of TFT LCD screen and driver board, AN7000 physical photos are as follows:

Front view of AN7000 LCD Screen

1.1 Parameter Description of LCD Screen

The following are the detailed parameters of the AN7000 LCD screen:

- LCD module size: check Figure 1;
- LCD screen size: 7.0 inches (diagonal);
- Display pixels: 1280 (horizontal) x 720 (vertical);
- Color depth: 16.7M colors (RGB 24-bit colors);

- Power supply and power consumption: Single power supply 3.3V, power consumption is 9.68W;
- Electrical interface: LVDS

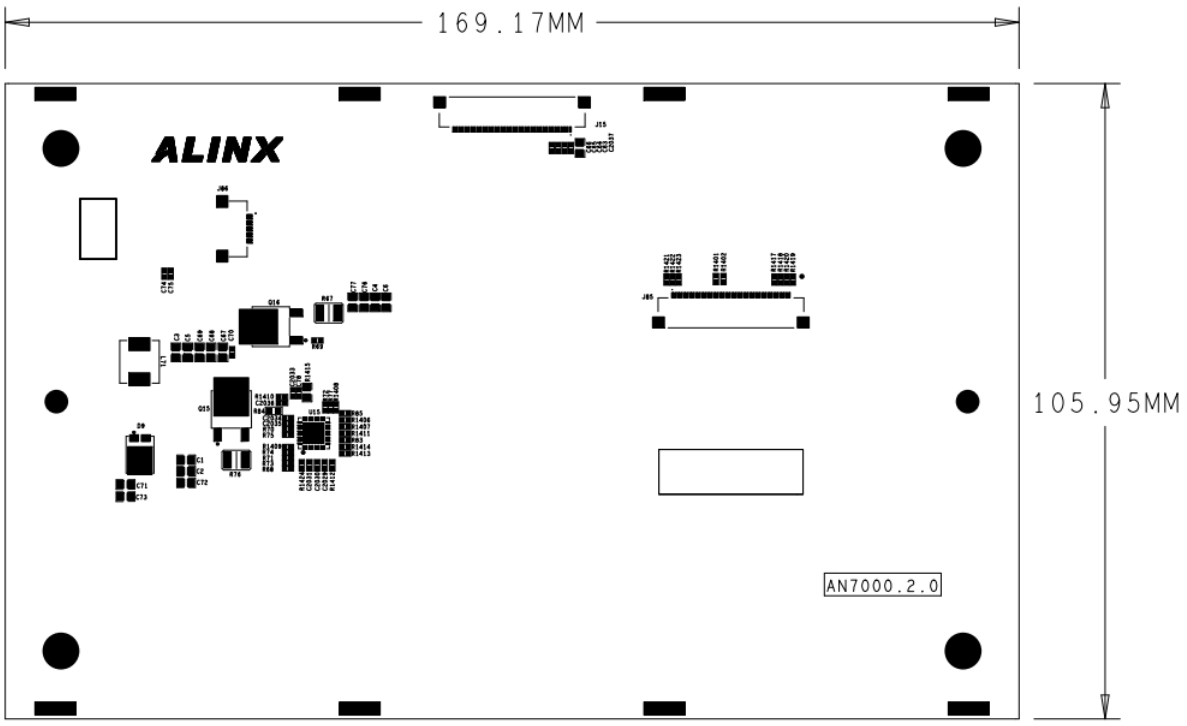


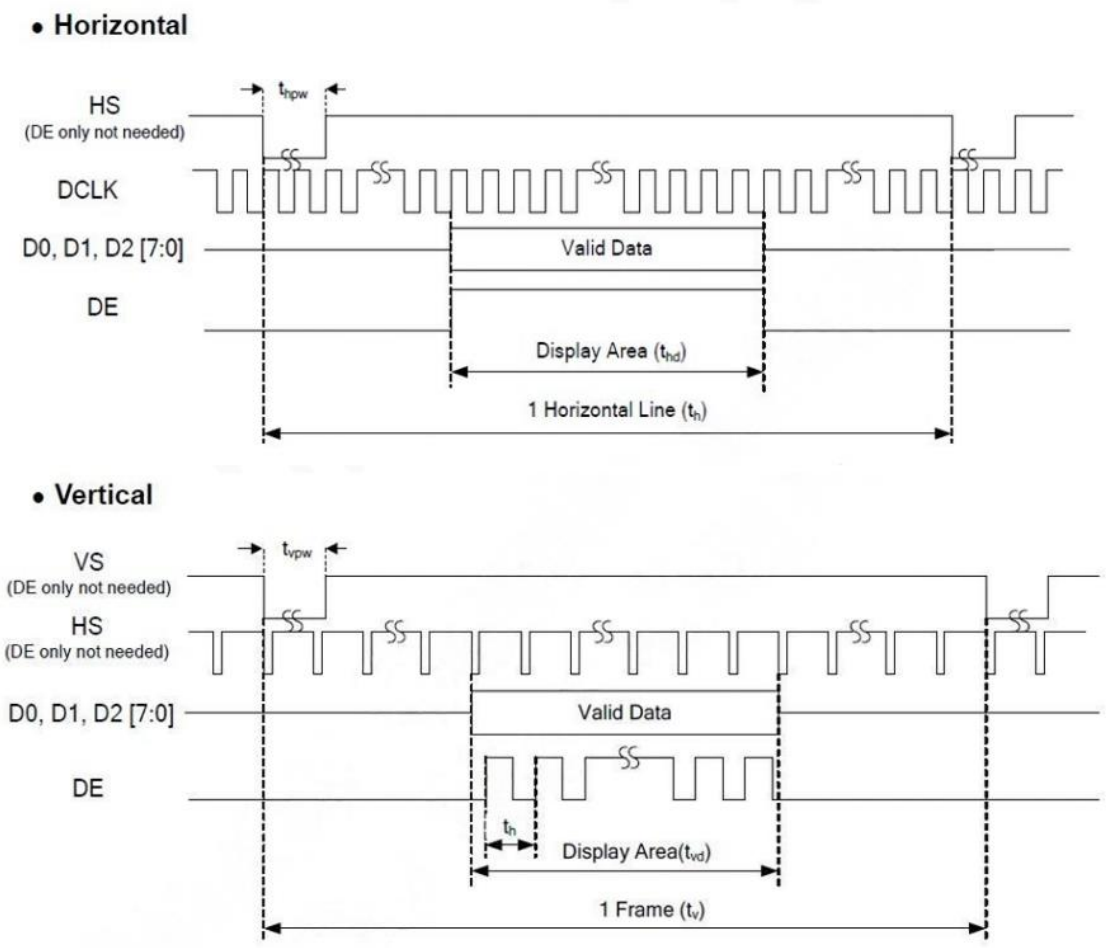
Figure 1- Module dimensions

1.2 Drive Timing of LCD Screen

Line timing:

The LCD display mode starts from the top left corner of the screen, displays point by point from the left image to the right, and returns to the starting position of the next line on the left side of the screen after each line is displayed. During this period, the line needs to be hidden, and the line synchronization signal is used to synchronize at the end of each line. The LCD driver has only one DE mode. When the DE signal is high, the data displayed is

valid, and the data is sampled along the rising edge of the clock DCLK. Here is the sequence diagram shown in the row:



LCD row displays timing parameters as shown in the following table:

Parameter	Symbol	Min.	TYP.	Max.	Unit
DCLK Frequency	FDCLK	(58.48)	(59.44)	(75.47)	MHz
Horizontal valid data	thd		1280		DCLK
1 horizontal line	th	(1335)	(1346)	(1664)	DCLK
Vertical valid data	tvd		720		H
1 vertical field	tv	(730)	(736)	(756)	H
Frame Rate	FR	-	(60)	-	Hz

2. Hardware connection

The 7" screen uses three 0.5mm spaced FPC connectors, two 40-pin connectors for image display (FH52E-40S-0.5SH) and one 10-pin connector (FH52E-10S-0.5SH) for backlight display. 7" LCD image display module 40PIN 0.5MM pitch FPC connector J15 for developing LVDS data communication connections between boards. As shown in Figure 2.1:

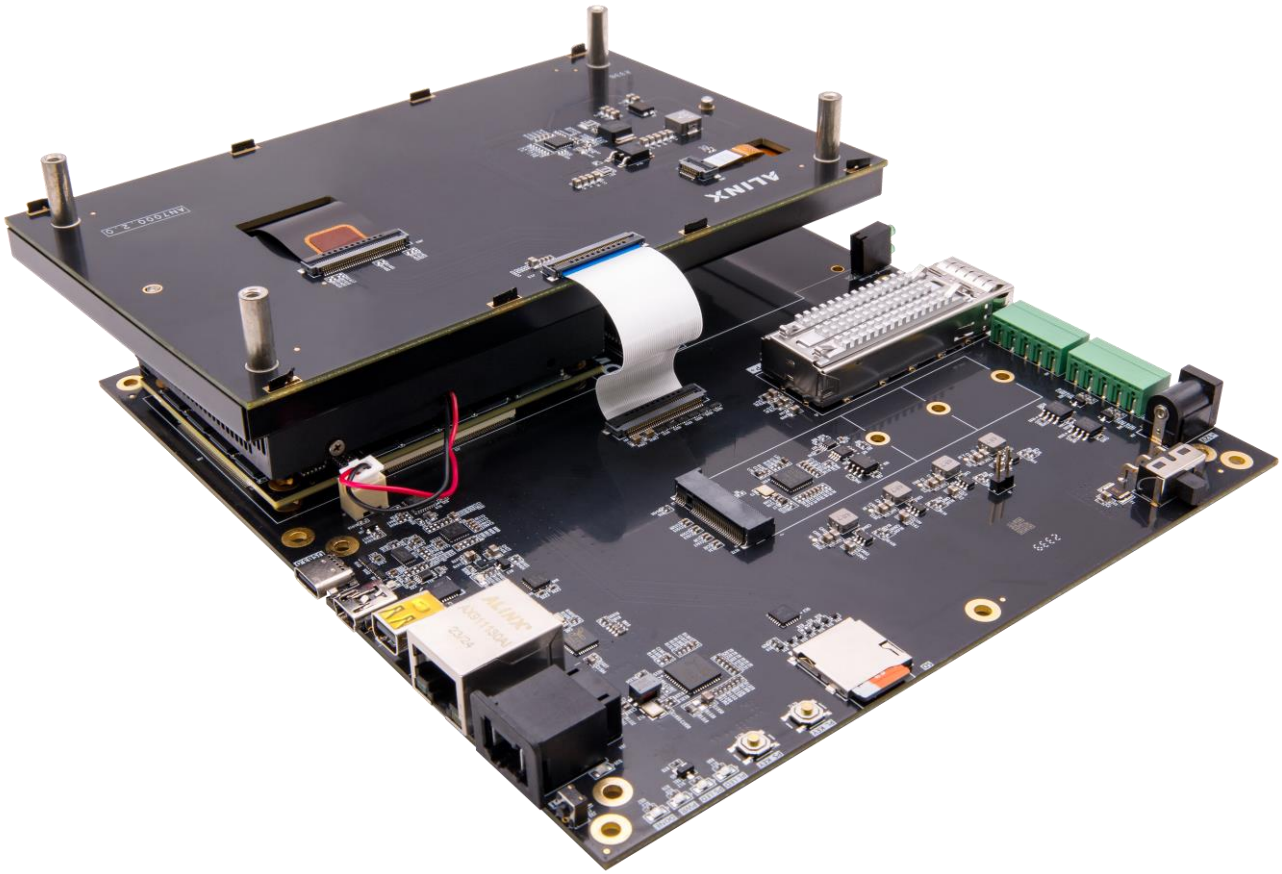


Figure 2.1 Connection between LCD screen and development board

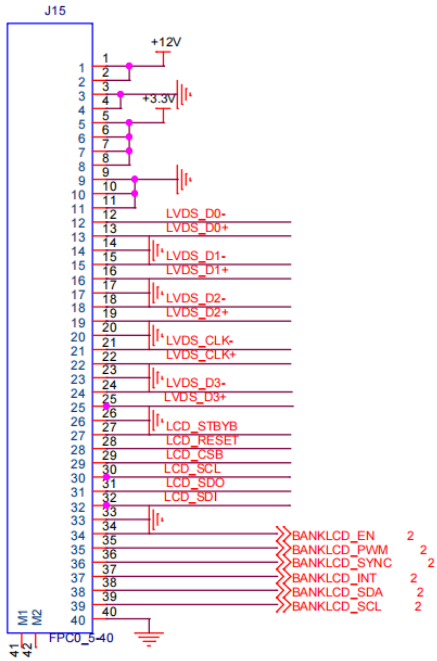
2.1 40PIN FPC Connection Type

The signal definition of the FPC Pin is compatible with the 40-pin FPC on the ALINX FPGA development board, and users can plug it directly into the development board for use (using a 40PIN 0.5MM pitch line connection). The following is the hardware connection diagram of the Z7-A development board and the 7” LCD display module:

Figure 2.2 Connection between the Z7-A development board and the LCD screen

2.2 J15 Board-to-board FPC connector Pinout

The following figure shows the signal arrangement of the J15FPC connector with a 40PIN 0.5mm pitch on the 7” LCD module:



Signal Name	J15 Connector	Description	Signal Name	J15 Connector	Description
+12V	PIN1	12V Power input	+12V	PIN2	12V Power input
GND	PIN3	Ground	GND	PIN4	Ground
+3.3V	PIN5	3.3V Power input	+3.3V	PIN6	3.3V Power input
+3.3V	PIN7	3.3V Power input	+3.3V	PIN8	3.3V Power input
GND	PIN9	Ground	GND	PIN10	Ground
GND	PIN11	Ground	LVDS_D0-	PIN12	LVDS Data channel 0 Negative
LVDS_D0+	PIN13	LVDS Data channel 0 Positive	GND	PIN14	Ground
LVDS_D1-	PIN15	LVDS Data channel 1 Negative	LVDS_D1+	PIN16	LVDS Data channel 1 Positive
GND	PIN17	Ground	LVDS_D2-	PIN18	LVDS Data channel 2 Negative
LVDS_D2+	PIN19	LVDS Data channel 2 Positive	GND	PIN20	Ground

LVDS_CLK-	PIN21	LVDS Clock signal Negative	LVDS_CLK+	PIN22	LVDS Clock signal Positive
GND	PIN23	Ground	LVDS_D3-	PIN24	LVDS Data channel 3 Negative
LVDS_D3+	PIN25	LVDS Data channel 3 Positive	GND	PIN26	Ground
LCD_STBYB	PIN27	LCD Alternate mode pin	LCD_RESET	PIN28	LCD Reset pin
LCD_CSB	PIN29	LCD Serial interface pin	LCD_SCL	PIN30	LCD Screen SPI Interface clock
LCD_SDO	PIN31	LCD Screen SPI Data output	LCD_SDI	PIN32	LCD Screen SPI Data input
GND	PIN33	Ground	BANKLCD_EN	PIN34	LCD Backlight enables the pin
BANKLCD_PWM	PIN35	LCD Backlight PWM Control	BANKLCD_SYNC	PIN36	LCD Backlight Synchronous booster input pin
BANKLCD_INT	PIN37	LCD Backlight Fault interrupt output	BANKLCD_SDA	PIN38	LCD Backlight Board I2C data pin
BANKLCD_SCL	PIN39	LCD Backlight Board I2C Clock pin	GND	PIN40	Ground