



Connecting EPSON Display Controllers to Xiamen Zettler LCD Panels

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Table of Contents

1	Introduction	5
2	Display Controller Compatibility	6
3	Connecting to the ATM0430D5	7
3.1	ATM0430D5 Pin Mapping	7
3.2	Connection Examples	8
3.2.1	Connecting the ATM0430D5 to the S1D13781	9
3.3	Example Register Settings	11
4	Change Record	12

1 Introduction

This document provides connection information enabling EPSON Display Controllers to control a variety of Xiamen Zettler Electronics Co., Ltd LCD panels. This document includes connector details, pin mappings, and example register settings.

For detailed technical information on EPSON Display Controllers or XIAMEN ZETTLER LCD panels, please refer to the specification or technical manual for each product.

This document is updated as appropriate. Please check for the latest revision of this document before beginning any development. The latest revision can be downloaded at http://www.epson.jp/device/semicon_e/product/index.htm#lcd_controllers

2 Display Controller Compatibility

This document discusses the following Xiamen Zettler TFT panel.

- ATM0430D5 (a-Si TFT, 4.3inch, 480x272)

The XIAMEN ZETTLER TFT panel is compatible with one or more of the following EPSON display controllers.

- S1D13781 (QFP 100-pin)

For further information on the Xiamen Zettler Electronics Co.,Ltd LCD products go to the Xiamen Zettler web site <http://www.zettlercn.com/productlist-51-56-en.html>

3 Connecting to the ATM0430D5

The ATM0430D5 TFT panel is compatible with the SID13781 display controllers. The following sections will provide connector details, pin mappings, and example register settings for these combinations.

3.1 ATM0430D5 Pin Mapping

The ATM0430D5 TFT panel uses a 40-pin connector with the following pin mapping.

Table 3-1 ATM0430D5 Pin Mapping

Connector Pin#	Pin Name	Pin Description
1	VLED-	Power for LED backlight cathode
2	VLED+	Power for LED backlight anode
3	GND	Power ground
4	VDD	Power voltage
5	R0	Red data0
6	R1	Red data1
7	R2	Red data2
8	R3	Red data3
9	R4	Red data4
10	R5	Red data5
11	R6	Red data6
12	R7	Red data7
13	G0	Green data0
14	G1	Green data1
15	G2	Green data2
16	G3	Green data3
17	G4	Green data4
18	G5	Green data5
19	G6	Green data6
20	G7	Green data7
21	B0	Blue data0
22	B1	Blue data1
23	B2	Blue data2
24	B3	Blue data3
25	B4	Blue data4
26	B5	Blue data5
27	B6	Blue data6
28	B7	Blue data7
29	GND	Power ground
30	CLK	Pixel clock
31	DISP	Display on/off

Connector Pin#	Pin Name	Pin Description
32	NC	OPEN
33	NC	OPEN
34	DE	Data enable (Hi-active)
35	NC	OPEN
36	GND	Power ground
37	NC	OPEN
38	NC	OPEN
39	NC	OPEN
40	NC	OPEN

Note

The recommended connector is a FH19SC-40S-0.5SH from Hirose Electric Co., Ltd. The connector is a 0.3mm pitch 40-pin FPC connector (20.57mm x 0.3mm gold plate).

3.2 Connection Examples

The information in this section provides connection examples for the S1D13781 display controllers.

In addition to the pin connections for the selected display controller, the ATM0430D5 requires the following power supplies.

VDD +3.3V typical (3.1 - 3.5V)

VLED+ +27.9V typical (25.2 - 31.5V)

For VDD, select a voltage within the supportable range of the Display Controller.

For further details on the ATM0430D5, such as power consumption and absolute maximum ratings, please contact your Xiamen Zettler representative.

3.2.1 Connecting the ATM0430D5 to the S1D13781

The following diagram shows an example implementation of the ATM0430D5 panel connected to the S1D13781.

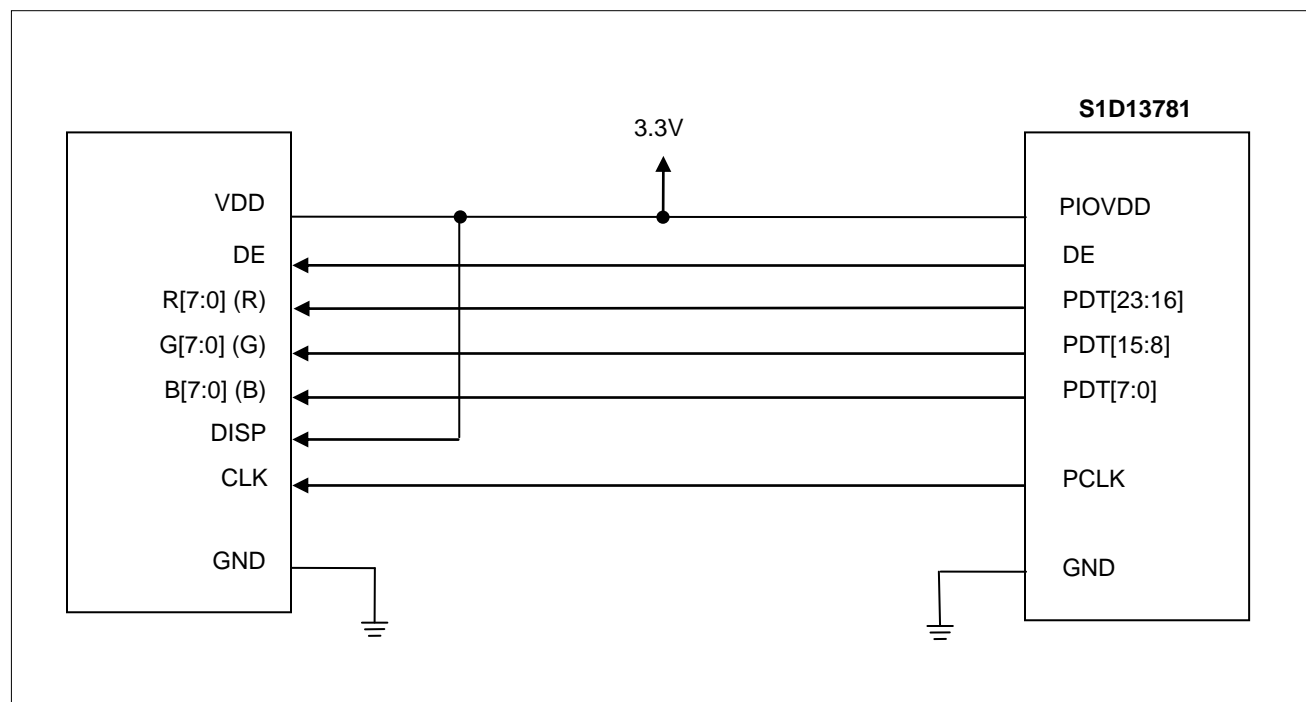


Figure 3-1 Connecting the ATM0430D5 to the S1D13781

The following table provides a detailed pin listing for the required connections between the ATM0430D5 and the S1D13781.

Table 3-2 Connecting the ATM0430D5 to the S1D13781

LCD Panel Connector Pin#	LCD Panel Pin Name	LCD Panel Pin Description	S1D13781 QFP Pin#	S1D13781 Pin Name
1	VLED-	Power for LED backlight cathode	—	—
2	VLED+	Power for LED backlight anode	—	—
3	GND	Power ground	Note	GND
4	VDD	Power voltage	Note	PIOVDD
5	R0	RED data signal (LSB)	81	PDT16
6	R1	RED data signal	82	PDT17
7	R2	RED data signal	83	PDT18
8	R3	RED data signal	84	PDT19
9	R4	RED data signal	85	PDT20
10	R5	RED data signal	86	PDT21
11	R6	RED data signal	87	PDT22
12	R7	RED data signal (MSB)	88	PDT23
13	G0	GREEN data signal (LSB)	70	PDT8

LCD Panel Connector Pin#	LCD Panel Pin Name	LCD Panel Pin Description	S1D13781 QFP Pin#	S1D13781 Pin Name
14	G1	GREEN data signal	71	PDT9
15	G2	GREEN data signal	72	PDT10
16	G3	GREEN data signal	74	PDT11
17	G4	GREEN data signal	75	PDT12
18	G5	GREEN data signal	76	PDT13
19	G6	GREEN data signal	77	PDT14
20	G7	GREEN data signal (MSB)	78	PDT15
21	B0	BLUE data signal (LSB)	61	PDT0
22	B1	BLUE data signal	62	PDT1
23	B2	BLUE data signal	63	PDT2
24	B3	BLUE data signal	64	PDT3
25	B4	BLUE data signal	65	PDT4
26	B5	BLUE data signal	66	PDT5
27	B6	BLUE data signal	68	PDT6
28	B7	BLUE data signal (LSB)	69	PDT7
29	GND	Power ground	Note	GND
30	CLK	Pixel clock	59	PCLK
31	DISP	Display on/off	Note	PIOVDD
32	NC	OPEN	—	—
33	NC	OPEN	—	—
34	DE	Data enable (Hi-active)	56	DE
35	NC	OPEN	—	—
36	GND	Power ground	Note	GND
37	NC	OPEN	—	—
38	NC	OPEN	—	—
39	NC	OPEN	—	—
40	NC	OPEN	—	—

Note

Allocation of GND and PIOVDD pin for each packages are as follows.

GND: QFP 12, 23, 38, 48, 57, 67, 80, 90

PIOVDD: QFP 60, 73, 89

3.3 Example Register Settings

In addition to the pin connections, the S1D13781 internal registers must be configured appropriately for the ATM0430D5 LCD panel. The following tables provide example settings for each display controller.

Also included in the table is an example clock configuration designed to achieve a typical LCD refresh.

Table 3-3 Example Register Settings for the S1D13781

Register Index and Name	Register Setting	Parameter Value
REG[12h] PLL Setting Register 1	000Fh	MM=16
REG[14h] PLL Setting Register 2	0029h	LL=42
REG[10h] PLL Setting Register 0	0001h	PLL enable
REG[16h] Internal Clock Configuration Register	0006h	fPLL_REF_CLK = fCLKI/7
REG[20h] Panel Setting Register	004Fh	DE: Hi-active PCLK Polarity: rising edge PanelType: Color TFT 24-bit
REG[24h] Horizontal Display Width Register	003Ch	480
REG[26h] Horizontal Non-Display Period Register	002Dh	45
REG[28h] Vertical Display Height Register	0110h	272
REG[2Ah] Vertical Non-Display Period Register	0010h	16
REG[04h] Power Save Configuration Register	0002h	MCK,PCLK enable
REG[22h] Display Setting Register	0001h	Panel interface enable
CLKI in MHz	—	24
PCLK in MHz	—	9
LCD refresh in Hz	—	59.52

4 Change Record

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