



Development Board for 31.2 inch E-paper Display DEXWM-C32



Dalian Good Display Co., Ltd.

Product Specifications



Customer	Standard
Description	Drive Board for 31.2" E-paper
Model Name	DEXWM-C32
Date	2023/04/10
Revision	1.0

	Design Engineering		
	Approval	Check	Design
			

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1. Overview

DEXWM-C32 is a dedicated controller board for the 31.2 inch E-paper display GDEP312TT3, with supporting software to drive the screen directly.

Part No.	Operating Temp.	E-paper Display Model	Color
DEXWM-C32	-20℃ ~ 70℃	GDEP312TT3	B/W 16 Greys

2. Parameters

Parameters	Specifications
Model Name	DEXWM-C32
Platform	Windows7/10
Outline Dimension	394mm x 42mm
Power Supply	DC12/3A volt
Operating Temp.	-20 ℃ ~ 70 ℃
Main Functions	Learn to drive E-paper display; Test and evaluate E-paper display; Secondary development based on this controller
Additional Functions	USB port

3. Main Functions

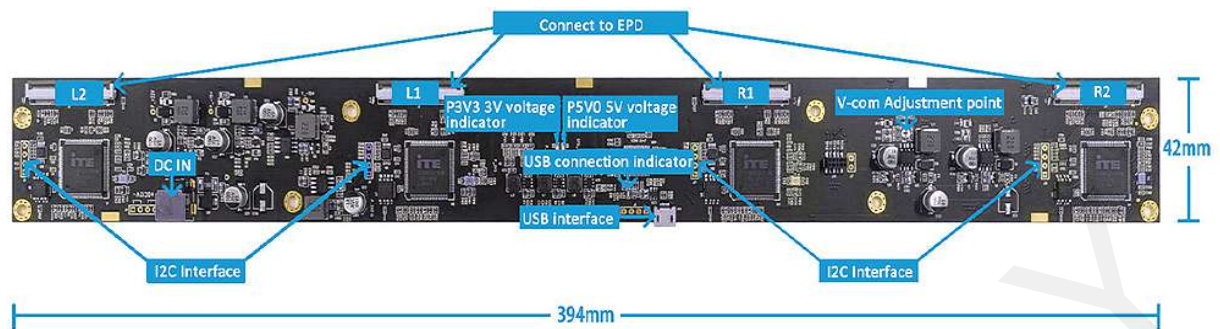


Figure 1 DEXWM-C32

4. Architecture Diagram

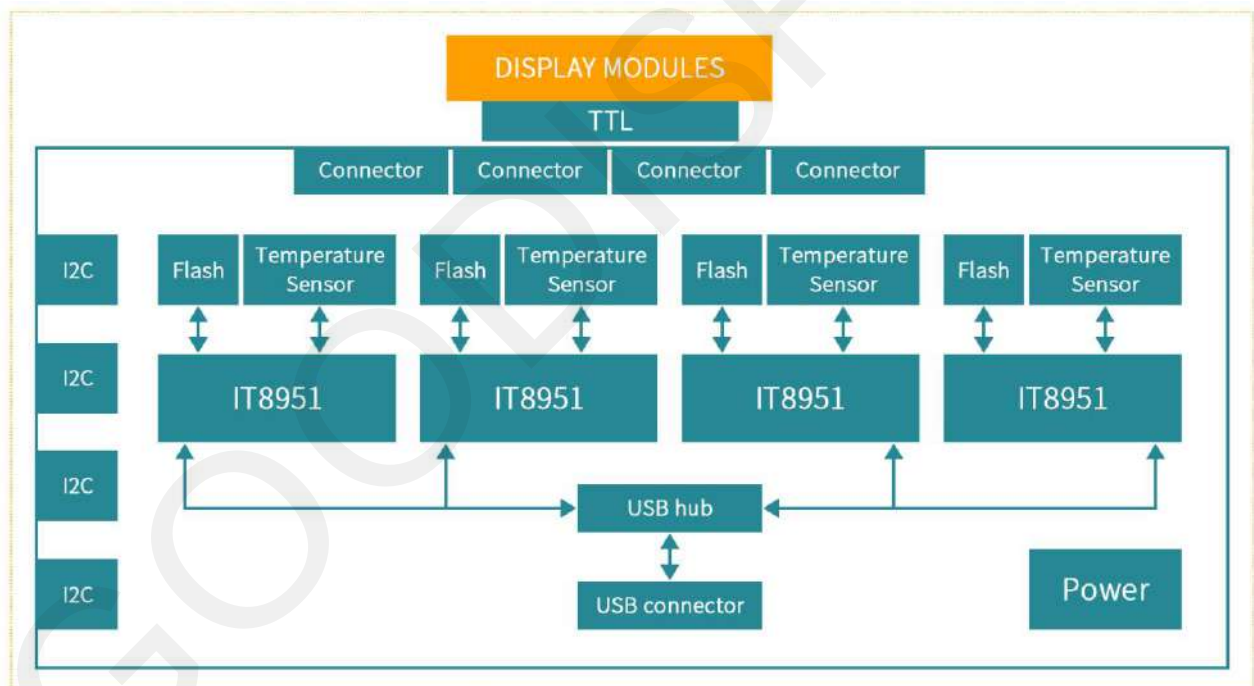


Figure 2 Architecture Diagram

5. Pin Definition

Connector L2:

Pin #	Signal	Description
1	VGL	Negative power supply gate driver
2	NC	NO Connection
3	VGH	Positive power supply gate driver
4	Mode2_L2	Output enable gate driver
5	VDD	Digital power supply drivers
6	Mode1_L2	Output enable gate driver
7	CKV_L2	Clock gate driver
8	SPV_L2	Start pulse gate driver
9	VSS	Ground
10	VCOM_TFT	Common voltage
11	VDD	Digital power supply drivers
12	VSS	Ground
13	XCL_L2	Clock source driver
14	D0_L2	Data signal source driver
15	D1_L2	Data signal source driver
16	D2_L2	Data signal source driver
17	D3_L2	Data signal source driver
18	D4_L2	Data signal source driver
19	D5_L2	Data signal source driver
20	D6_L2	Data signal source driver
21	D7_L2	Data signal source driver
22	VSS	Ground
23	D8_L2	Data signal source driver
24	D9_L2	Data signal source driver
25	D10_L2	Data signal source driver
26	D11_L2	Data signal source driver
27	D12_L2	Data signal source driver
28	D13_L2	Data signal source driver
29	D14_L2	Data signal source driver
30	D15_L2	Data signal source driver
31	XSTL_L2	Start pulse source driver
32	XLE_L2	Latch enable source driver
33	XOE_L2	Outputs enabled when OE is logic "H", Outputs forced to GND when OE is logic "L".
34	ISEL	Input data bus width selection. L: input data bus width is 8-bit, i.e., D7 ~ D0 are valid inputs. D15 ~ D8 are internal pull down, and user should connect to logic "L"

		levels or let them open. H: input data bus width is 16-bit.
35	NC	NO Connection
36	VPOS	Positive power supply source driver
37	NC	NO Connection
38	VNEG	Negative power supply source driver
39	VCOM_FPL	Common Voltage
40	NC	Please keep the pin floating
41	NC	Please keep the pin floating
42	Detect1	Detection function pin
43	Detect2	Detection function pin
44	Detect3	Detection function pin
45	NC	NO Connection
46	Detect4	Detection function pin
47	Detect5	Detection function pin
48	Detect6	Detection function pin
49	NC	NO Connection
50	NC	Please keep the pin floating

Connector L1:

Pin #	Signal	Description
1	VGL	Negative power supply gate driver
2	NC	NO Connection
3	VGH	Positive power supply gate driver
4	Mode2_L1	Output enable gate driver
5	VDD	Digital power supply drivers
6	Mode1_L1	Output enable gate driver
7	CKV_L1	Clock gate driver
8	SPV_L1	Start pulse gate driver
9	VSS	Ground
10	VCOM_TFT	Common voltage
11	VDD	Digital power supply drivers
12	VSS	Ground
13	XCL_L1	Clock source driver
14	D0_L1	Data signal source driver
15	D1_L1	Data signal source driver
16	D2_L1	Data signal source driver
17	D3_L1	Data signal source driver
18	D4_L1	Data signal source driver
19	D5_L1	Data signal source driver
20	D6_L1	Data signal source driver

21	D7_L1	Data signal source driver
22	VSS	Ground
23	D8_L1	Data signal source driver
24	D9_L1	Data signal source driver
25	D10_L1	Data signal source driver
26	D11_L1	Data signal source driver
27	D12_L1	Data signal source driver
28	D13_L1	Data signal source driver
29	D14_L1	Data signal source driver
30	D15_L1	Data signal source driver
31	XSTL_L1	Start pulse source driver
32	XLE_L1	Latch enable source driver
33	XOE_L1	Outputs enabled when OE is logic "H", Outputs forced to GND when OE is logic "L".
34	ISEL	Input data bus width selection. L: input data bus width is 8-bit, i.e., D7 ~ D0 are valid inputs. D15 ~ D8 are internal pull down, and user should connect to logic "L" levels or let them open. H: input data bus width is 16-bit.
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37	NC	NO Connection
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39	VCOM_FPL	Common Voltage
40	NC	NO Connection
41	NC	Please keep the pin floating
42	NC	NO Connection
43	NC	NO Connection
44	NC	NO Connection
45	NC	NO Connection
46	NC	NO Connection
47	NC	NO Connection
48	NC	NO Connection
49	NC	NO Connection
50	NC	Please keep the pin floating

Connector R1:

Pin #	Signal	Description
1	VGL	Negative power supply gate driver
2	NC	NO Connection
3	VGH	Positive power supply gate driver

4	Mode2_R1	Output enable gate driver
5	VDD	Digital power supply drivers
6	Mode1_R1	Output enable gate driver
7	CKV_R1	Clock gate driver
8	SPV_R1	Start pulse gate driver
9	VSS	Ground
10	VCOM_TFT	Common voltage
11	VDD	Digital power supply drivers
12	VSS	Ground
13	XCL_R1	Clock source driver
14	D0_R1	Data signal source driver
15	D1_R1	Data signal source driver
16	D2_R1	Data signal source driver
17	D3_R1	Data signal source driver
18	D4_R1	Data signal source driver
19	D5_R1	Data signal source driver
20	D6_R1	Data signal source driver
21	D7_R1	Data signal source driver
22	VSS	Ground
23	D8_R1	Data signal source driver
24	D9_R1	Data signal source driver
25	D10_R1	Data signal source driver
26	D11_R1	Data signal source driver
27	D12_R1	Data signal source driver
28	D13_R1	Data signal source driver
29	D14_R1	Data signal source driver
30	D15_R1	Data signal source driver
31	XSTL_R1	Start pulse source driver
32	XLE_R1	Latch enable source driver
33	XOE_R1	Outputs enabled when OE is logic "H", Outputs forced to GND when OE is logic "L".

34	ISEL	Input data bus width selection. L: input data bus width is 8-bit, i.e., D7 ~ D0 are valid inputs. D15 ~ D8 are internal pull down, and user should connect to logic "L" levels or let them open. H: input data bus width is 16-bit.
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39	VCOM_FPL	Common Voltage
40	NC	NO Connection
41	NC	Please keep the pin floating

42	NC	NO Connection
43	NC	NO Connection
44	NC	NO Connection
45	NC	NO Connection
46	NC	NO Connection
47	NC	NO Connection
48	NC	NO Connection
49	NC	NO Connection
50	NC	Please keep the pin floating

42	NC	NO Connection
43	NC	NO Connection
44	NC	NO Connection
45	NC	NO Connection
46	NC	NO Connection
47	NC	NO Connection
48	NC	NO Connection
49	NC	NO Connection
50	NC	Please keep the pin floating

Connector R2:

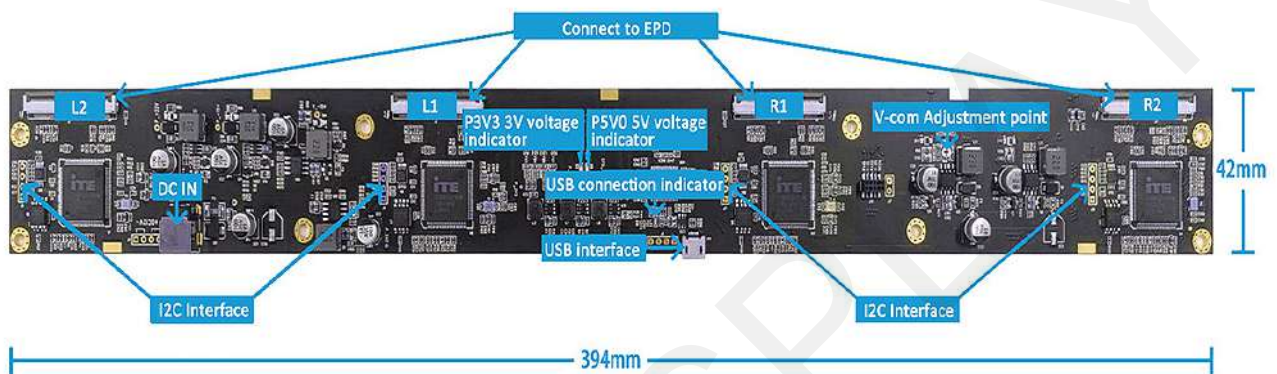
Pin #	Signal	Description
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2	NC	NO Connection
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5	VDD	Digital power supply drivers
6	Mode1_R2	Output enable gate driver
7	CKV_R2	Clock gate driver
8	SPV_R2	Start pulse gate driver
9	VSS	Ground
10	VCOM_TFT	Common voltage
11	VDD	Digital power supply drivers
12	VSS	Ground
13	XCL_R2	Clock source driver
14	D0_R2	Data signal source driver
15	D1_R2	Data signal source driver
16	D2_R2	Data signal source driver
17	D3_R2	Data signal source driver
18	D4_R2	Data signal source driver
19	D5_R2	Data signal source driver
20	D6_R2	Data signal source driver
21	D7_R2	Data signal source driver
22	VSS	Ground
23	D8_R2	Data signal source driver
24	D9_R2	Data signal source driver
25	D10_R2	Data signal source driver
26	D11_R2	Data signal source driver
27	D12_R2	Data signal source driver
28	D13_R2	Data signal source driver

29	D14_R2	Data signal source driver
30	D15_R2	Data signal source driver
31	XSTL_R2	Start pulse source driver
32	XLE_R2	Latch enable source driver
33	XOE_R2	Outputs enabled when OE is logic "H", Outputs forced to GND when OE is logic "L".
34	ISEL	Input data bus width selection. L: input data bus width is 8-bit, i.e., D7 ~ D0 are valid inputs. D15 ~ D8 are internal pull down, and user should connect to logic "L" levels or let them open. H: input data bus width is 16-bit.
35	NC	NO Connection
36	VPOS	Positive power supply source driver
37	NC	NO Connection
38	VNEG	Negative power supply source driver
39	VCOM_FPL	Common Voltage
40	NC	Please keep the pin floating
41	NC	Please keep the pin floating
42	Detect7	Detection function pin
43	Detect8	Detection function pin
44	Detect9	Detection function pin
45	NC	NO Connection
46	NC	NO Connection
47	Detect10	Detection function pin
48	Detect11	Detection function pin
49	Detect12	Detection function pin
50	NC	Please keep the pin floating

6 . instruction

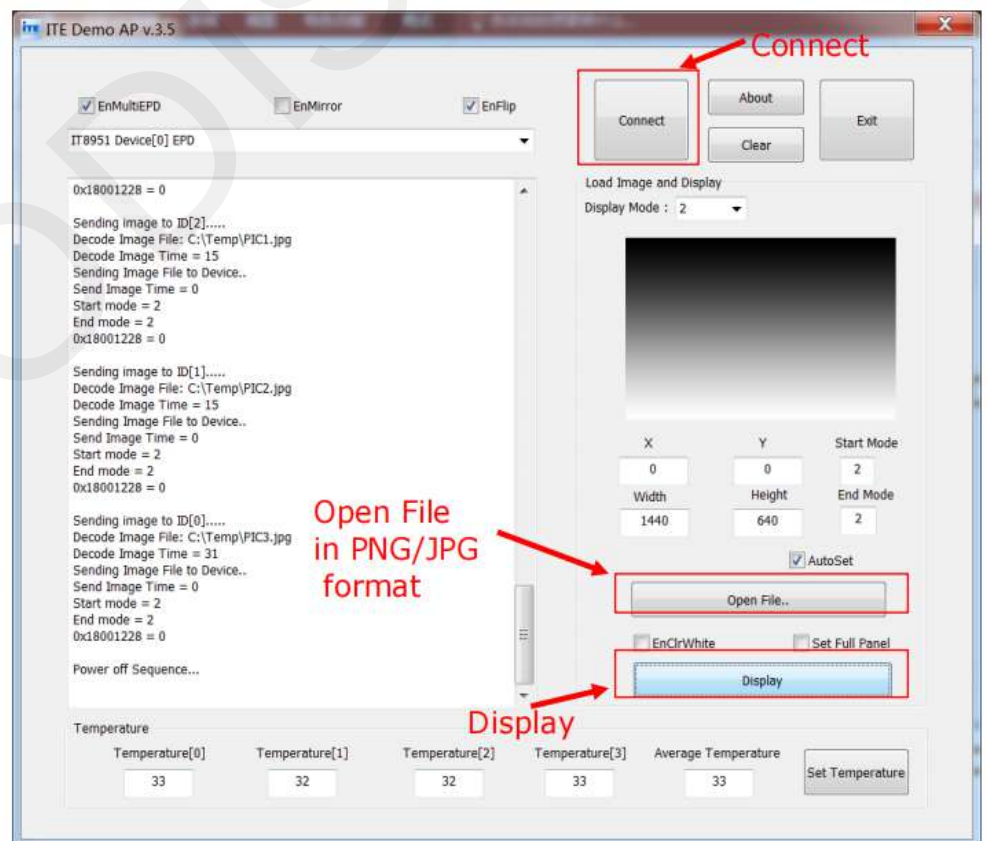
1. Indicator

- P5V0 5V voltage indicator, normal if the light is on.
- USB connection indicator, normal if the green light is on.
- P3V3 3.3V voltage indicator, normal if the light is on.



2.Measuring Voltage

- Connect power supply with 12V/3A adapter;
- Connect USB to PC and leave display disconnected;
- Open software **【ITE Demo APV3.5】**, click "Connect", and then "Open File" to import an image (in PNG/JPG format);
- Click "Display", measure the voltage of the test point and the value will be kept for about 3s. After the voltage value returns to zero, click "display" to measure again.



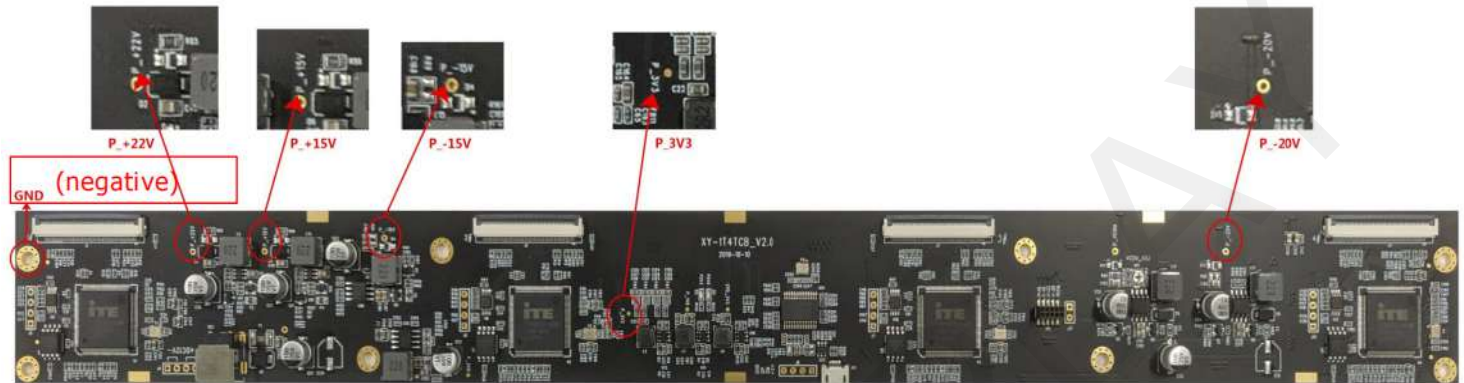
3. Electrical Test

- Measure and get the reads for these test points
- The negative electrode of the ammeter is connected to "GND" (any positioning hole is OK), the positive pole is connected to the test point for voltage measurement.

Test Point Voltage Value Table

Test Point	P_+22V	P_+15V	P_-20V	P_-15V	P_3V3
Voltage	+22V	+15V	-20V	-15V	+3.3V

Voltage value error range: $\pm 1V$

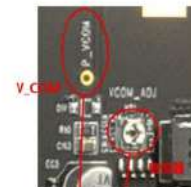


4. V-COM Measurement and Adjustment

- Measure the voltage of P_VCOM, the default value is -2.5V.
- Connect the two holes at the JL position, and then turn the potentiometer to adjust the Vcom voltage; Turn the potentiometer clockwise to adjust to 0V; turn it counterclockwise to adjust to -5V.
- Do not connect the screen when adjusting and measuring V-COM.

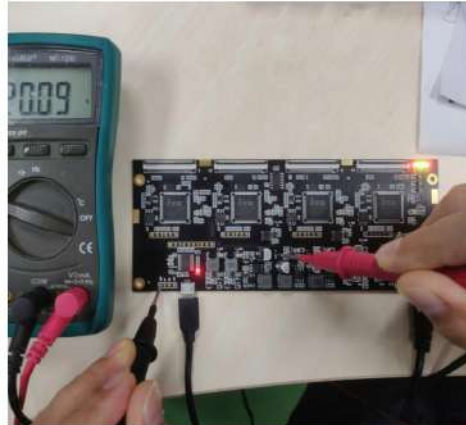
- Turn the potentiometer clockwise, VCOM tends to 0 V.
- Turn the potentiometer counterclockwise, VCOM tends to -5V.

Short-circuit the two holes at the JL position, then turn the potentiometer to adjust the V-COM



5.Examples and Precautions

- The screen cannot be connected during measurement.
- Before measuring, you must first complete the connection with the PC measurement tool, click the DISPLAY button in the software (please refer to the software instructions for the installation and use of ITE DemoAP V3.5. The voltage only lasts for about 3 seconds during the refresh process, and click again after returning to 0 Display to measure.)
- The steps to measure VCOM voltage are the same as other test points.
- Do not connect to the screen when adjusting VCOM.
- The driver board needs to be equipped with a 12V/3A power adapter.



ITE_MultiEPD test program instructions:

Environment settings:

- Please first create a folder named Temp on the C drive;
- Unzip the **【ITE_MultiEPD】** compressed package to find the exe file.

Execute screen operations:

- Connect the control board to the PC, turn on the power, and open ITE_TCOn_DemoAP.exe;
- Click Connect with the mouse, and the interface as shown in the figure below will appear.

