



## **Adapter Board for 3.1 inch E-Paper Display DESPI-C31**



Dalian Good Display Co., Ltd.

# Product Specifications

<b>Customer</b>	<b>Standard</b>
<b>Description</b>	<b>Adapter Board For E-paper Display</b>
<b>Model Name</b>	<b>DESPI-C31</b>
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## 1. Overview

This is an adapter board specially designed for the 3.1 inch SPI E-paper display GDEQ031T10, connected with various platform motherboards launched by Good Display, could provide the boost converter circuit needed for driving the display.

## 2. Specification

Parameter	Specification
Model	DESPI-C31
Platform	STM32、Arduino
Dimension	41mm x 22mm
Power Supply	3.3V
Example Code	Available
Operating Temp.	-20 °C ~ 70 °C
Main Function	Provide driving voltage for E-paper display; Provide E-paper display communication interface for MCU board; Help users learn to use E-paper display.
Additional Function	E-paper display power consumption measurement, E-paper working state detection

### 3. Diagram

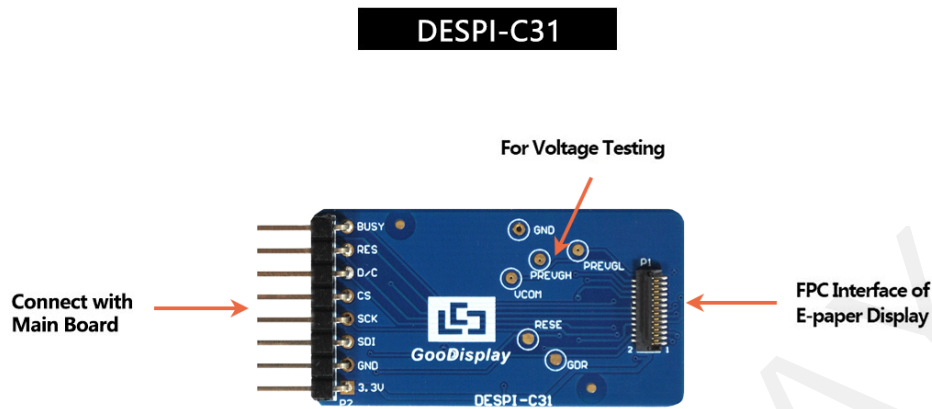


Figure 1 DESPI-C31

#### 3.1. Pin Definition

1) **BUSY** : E-paper display busy signal. When E-paper display is refreshed, **BUSY-N** pin sends a busy signal to MCU, at this time, MCU cannot read or write E-paper display drive IC; When E-paper display is refreshed, **BUSY-N** pin sends the idle status signal, and MCU can read and write E-paper display drive IC. Busy state of **BUSY-N** pin is low level, idle state is high level.

2) **RST** : Electronic paper reset signal, valid at low level.

3) **DC** : Data/command read/write selection, high level is data, low level is command.

4) **CS** : Chip selection, active at low level.

5) **SCL** : SPI serial communication clock signal line.

6) **SDA** : SPI serial communication data signal line.

7) **GND** : Negative pole of power supply.

8) **VDD** : Power supply positive pole.

Note: For the IO settings in the process of programming, generally **BUSY** is set as the input mode, and other IO is set as the output mode.

### 3.2. Voltage Testing

This adapter has test points for voltage measurement, including PREVGH, PREVGL, VCOM and GND. The functions of each test point are as follows:

- 1) PREVGH: positive voltage of MOS tube gate pole.
- 2) PREVGL: MOS tube gate pole negative voltage.
- 3) VCOM: common terminal voltage test point of electronic paper.
- 4) GND: negative pole of power supply (common terminal of test point voltage).

### 3.3. E-paper display FPC interface

The electronic paper is connected with the adapter plate through this interface. When connecting, insert the electronic paper FPC golden finger downward to the P1 connector of the adapter board in the way shown in Figure2.

Note: This connector is a rear lock type. When using it, you need to stand up the switch first, insert the E-paper display and then press the switch to lock it.



Figure 2 : Connection of E-paper display and Adapter

## 4. FAQ of Drive Circuit of E-paper Display

### 4.1. Self-made drive board cannot drive e-paper display

First measure the voltage of VGH and VGL to see if boost is made. If the boost failed, please check the boost converter circuit of the schematic and check if the components meet the requirements (make sure the boost capacitor has enough withstand voltage, if the withstand voltage is not enough, the capacitor will burn out during boost).

### 4.2. Diode selection for E-paper display driving circuit

It is necessary to select a Schottky diode with parameters equivalent to MBR0530, and the switching frequency must meet the actual requirements.

### 4.3. Selection of FPC socket for e-paper display drive circuit

Select the FPC socket with 25PIN of upper contact or upper and lower contact (Model: OK-F302-25115), and the pin spacing is 0.3mm.

### 4.4. High current in e-paper display deep sleep mode

The high current in deep sleep mode may be caused by the large capacitance of the boost part.