



DK_VIDEO_GW5AT-LV60UG225_V1.0

Demo User Guide

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1 About This Guide

1.1 Purpose

DK_VIDEO_GW5AT-LV60UG225_V1.0 Development Board (hereafter referred to as “Development Board”) Demo User Guide consists of demo features, hardware compositions, hardware connections, and demo effects.

1.2 Related Documents

The latest user guides are available on the GOWINSEMI Website. You can find the related documents at www.gowinsemi.com: [DBUG1281, DK_VIDEO_GW5AT-LV60UG225_V1.0 Development Board User Guide](#).

1.3 Terminology and Abbreviations

The terminology and abbreviations used in this manual are as shown in Table 1-1.

Table 1-1 Terminology and Abbreviations

Terminology and Abbreviations	Meaning
DP	Display Port
DSI	Display Serial Interface
HDMI	High Definition Multimedia Interface
LVDS	Low-Voltage Differential Signaling
MIPI	Mobile Industry Processor Interface
UART	Universal Asynchronous Receiver/Transmitter

1.4 Support and Feedback

Gowin Semiconductor provides customers with comprehensive technical support. If you have any questions, comments, or suggestions, please feel free to contact us directly using the information provided below.

Website: www.gowinsemi.com

E-mail: support@gowinsemi.com

2 Demo Introduction

The demo includes basic demos and image demos. The basic demo is used to validate the board's basic functions such as HDMI, DDR3, LVDS, DSI, and DP. The image demo conducts HDMI and LVDS screen display tests for various cameras based on DDR3, MIPI C-PHY hard core, and MIPI D-PHY soft core.

Table 2-1 Basic Demo Introduction

No.	Project Name	Design Description
1	01_G60_LED_1bit_Test	1-bit LED blinking test
2	02_G60_UART_Test_115200	Serial communication loopback test (115200bps)
3	03-1_G60_HDMI_Display_7200P60	1280*720@60 HDMI screen display test
4	03-2_G60_HDMI_Display_1080P60	1920*1080@60 HDMI screen display test
5	04_G60_LVDS_Display_1024x600	1024*600@60 LVDS LCD screen display test
6	05_G60_DSI_Display_1080x1920	1080*1920@60 MIPI DSI LCD screen display test
7	06_G60_DP_Display_1080P60	1920*1080@60 DP screen display test
8	07_G60_DP_Display_1080P60_RX_2TX	1920*1080@ 60 DP screen receiving display test
9	08-1_G60_DDR3_HDMI_Display_1080P60	1920*1080@60 DDR3 image cache and HDMI screen display test
10	08-2_G60_DDR3_LVDS_Display_1024x600	1024*600@60 DDR3 image cache and LVDS screen display test
11	08-3_G60_DDR3_DSI_	1080*1920@60 DDR3 image cache

No.	Project Name	Design Description
	Display_10801920	and MIPI DSI LCD screen display test

Table 2-2 Image Demo Introduction

No.	Project Name	Design Description
1	01-1_SC130GS_DDR3_HDMI_720P60	SC130GS black-and-white exposure 1-lane HDMI screen display project based on DPHY soft core and DDR3
2	01-2_SC130GS_DDR3_LVDS_1024600	SC130GS black-and-white exposure 1-lane LVDS screen display project based on DPHY soft core and DDR3
3	02-1_SC2210_DDR3_HDMI_1080P60	SC2210 color exposure 1-lane HDMI screen display project based on DPHY soft core and DDR3
4	02-2_SC2210_DDR3_LVDS_1024600	SC2210 color exposure 1-lane LVDS screen display project based on DPHY soft core and DDR3
5	03-1_IMX586_DDR3_HDMI_1080P60	IMX586 1920x1080@60 HDMI screen display project based on CPHY hard core
6	03-2_IMX586_DDR3_LVDS_1024600	IMX586 1024x600@60 LVDS screen display project based on CPHY hard core

3 Basic Demo

3.1 1-bit LED Blinking Test

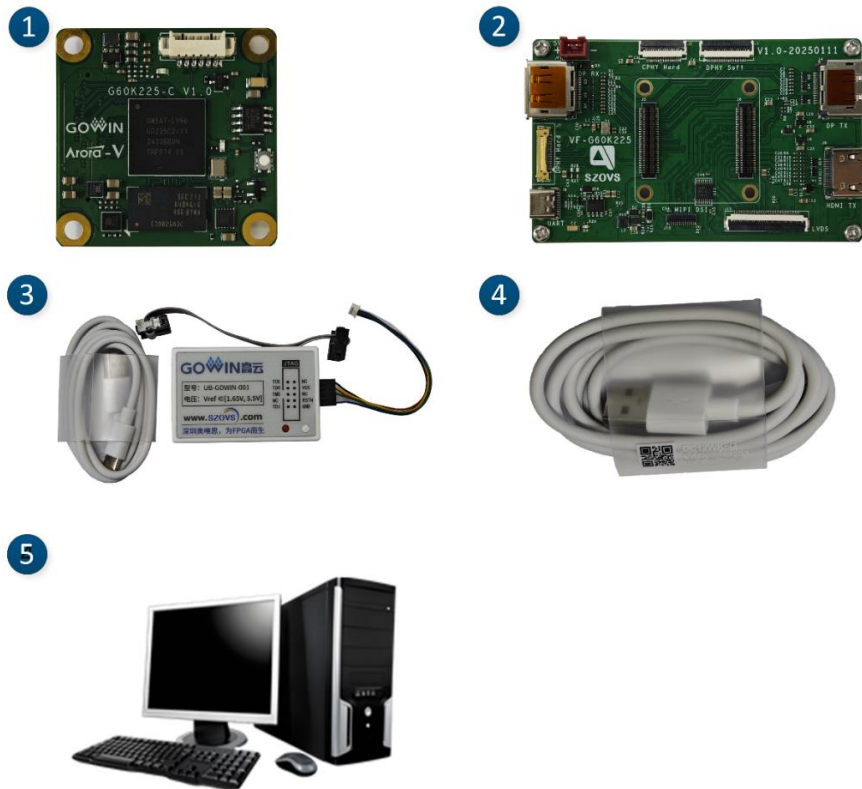
3.1.1 Demo Feature

The feature of this demo is to implement LED blinking on the core board.

3.1.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. PC

Figure 3-1 Hardware Composition of LED Blinking Test



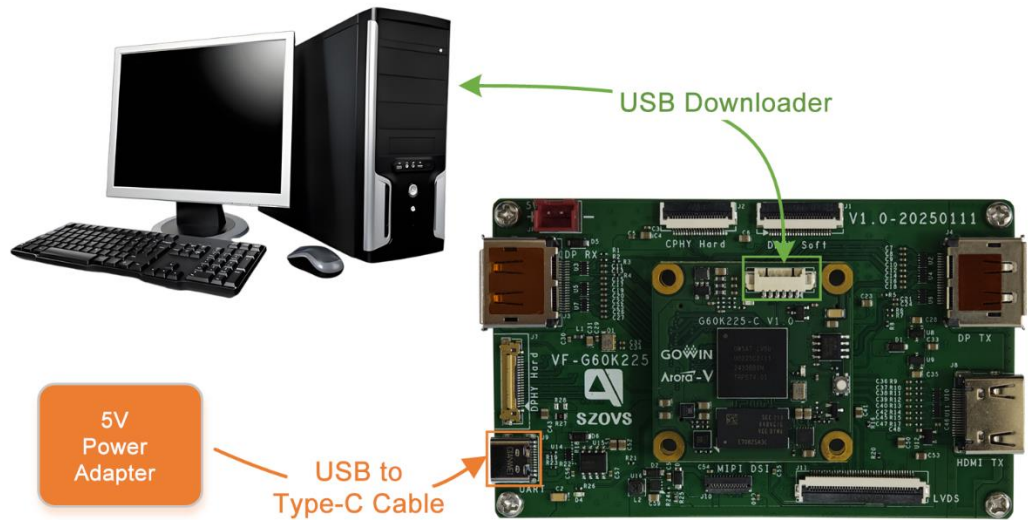
- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ PC

3.1.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 3-2 Hardware Connection Diagram of LED Blinking Test



3.1.4 Demo Effect

After downloading the program, the LED on the core board blinks.

3.2 Serial Communication Loopback Test (115200bps)

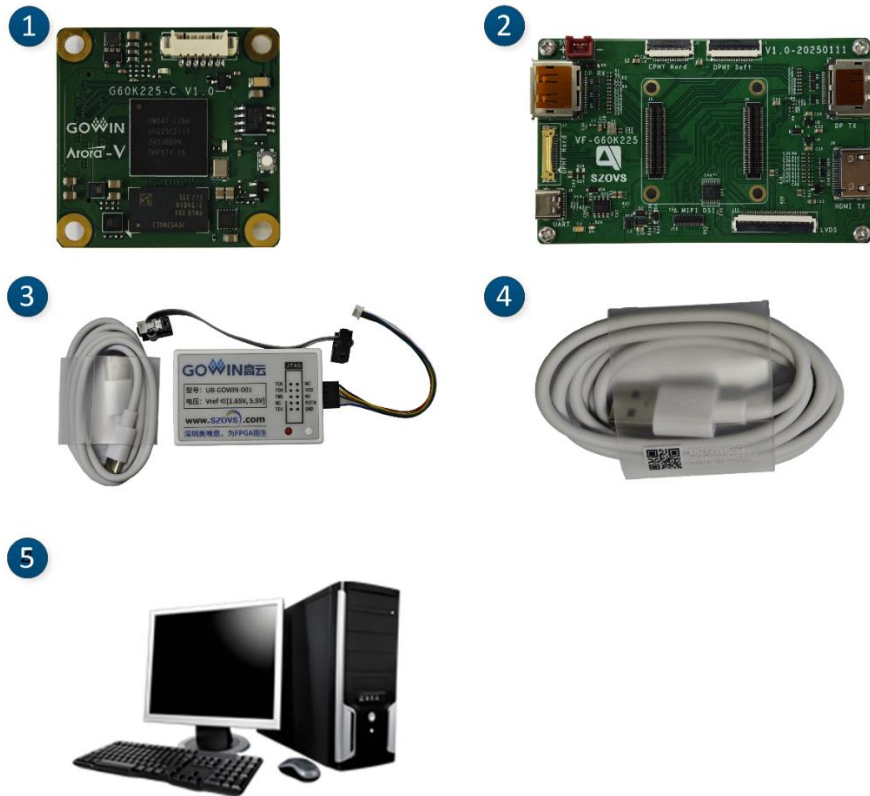
3.2.1 Demo Feature

The feature of this demo is to implement the loopback test of serial data at a baud rate of 115200bps.

3.2.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. PC

Figure 3-3 Hardware Composition of UART Serial Communication Loopback Test



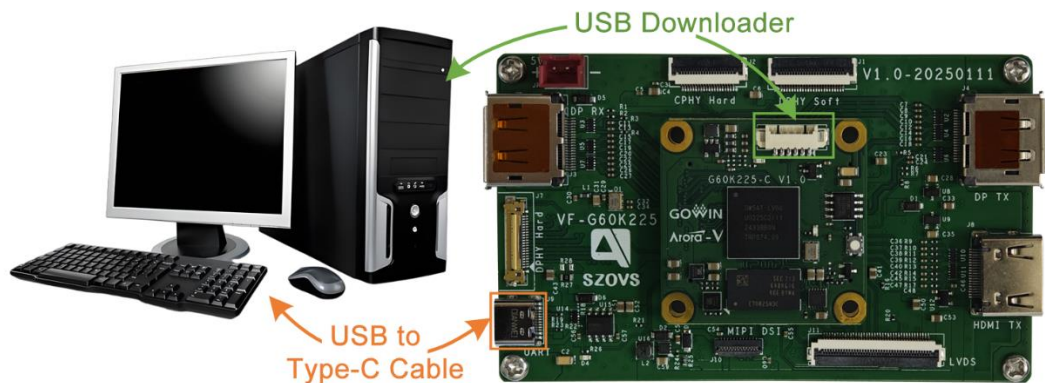
- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ PC

3.2.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Finally, insert one end of the USB to Type-C cable into the carrier board's USB to Type-C port (J9) and connect the other end to the PC.

The connection diagram is as follows.

Figure 3-4 Hardware Connection Diagram of UART Serial Communications Loopback Test



3.2.4 Demo Effect

After downloading the program, open the serial assistant, select the port, set the baud rate to 115200, stop bits to 1, data bits to 8, and parity to None, the received characters will match the sent ones.

3.3 1280*720@60 HDMI Screen Display Test

3.3.1 Demo Feature

The feature of this demo is to implement the 720P HDMI output display.

3.3.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. Monitor with HDMI interface
6. HDMI cable
7. PC

Figure 3-5 Hardware Composition of 1280*720@60 HDMI Screen Display Test



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ Monitor with HDMI interface
- ⑥ HDMI cable
- ⑦ PC

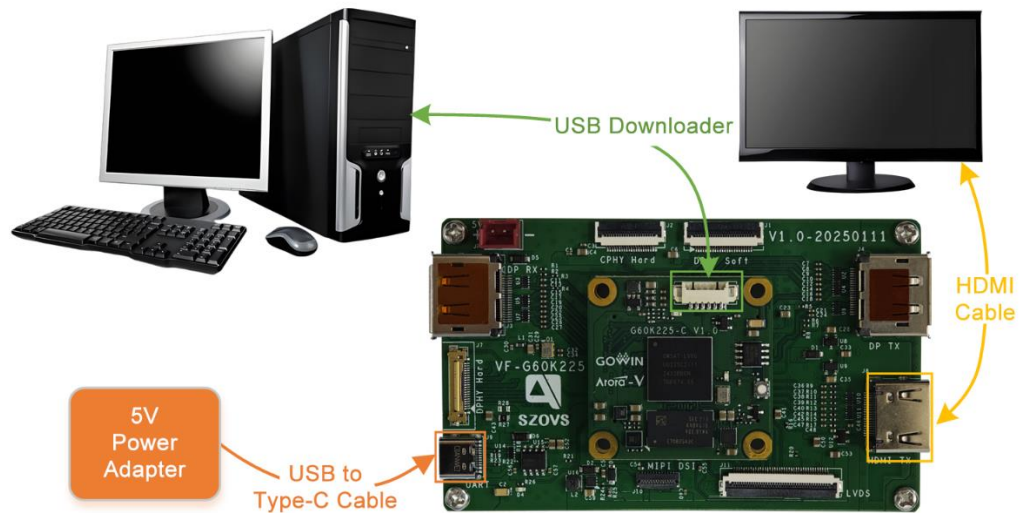
3.3.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).

3. Then, connect the HDMI monitor to the carrier board's HDMI port (J8) with an HDMI cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 3-6 Hardware Connection Diagram of 1280*720@60 HDMI Screen Display Test



3.3.4 Demo Effect

After downloading the program, the HDMI monitor cycles through four images.

3.4 1920*1080@60 HDMI Screen Display Test

3.4.1 Demo Feature

The feature of this demo is to implement the 1080P HDMI output and display.

3.4.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. Monitor with HDMI interface
6. HDMI cable
7. PC

Figure 3-7 Hardware Composition of 1920*1080@60 HDMI Screen Display Test



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ Monitor with HDMI interface
- ⑥ HDMI cable
- ⑦ PC

3.4.3 Demo Hardware Connection

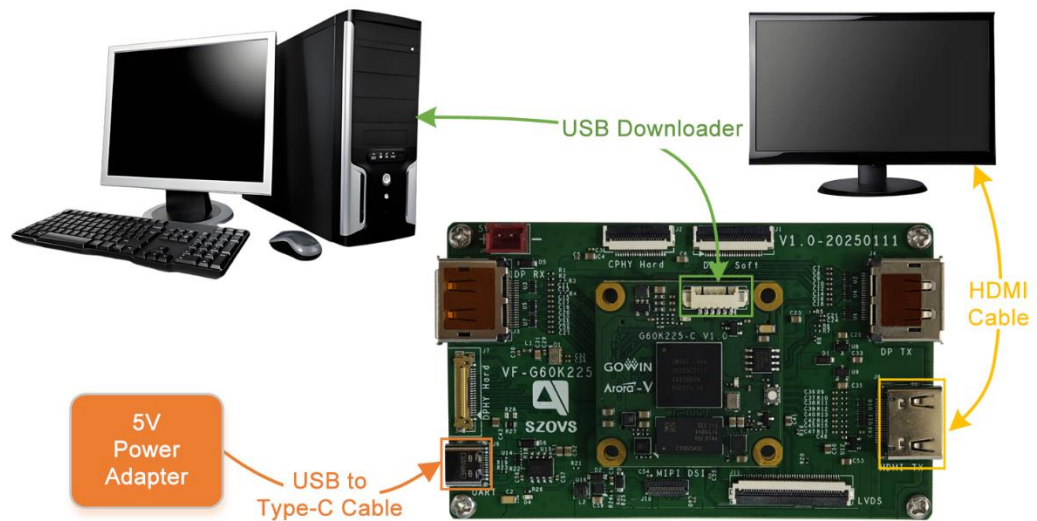
1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the HDMI monitor to the carrier board's HDMI port (J8)

with an HDMI cable.

4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 3-8 Hardware Connection Diagram of 1920*1080@60 HDMI Screen Display Test



3.4.4 Demo Effect

After downloading the program, the HDMI monitor cycles through four images.

3.5 1024*600@60 LVDS LCD Screen Display Test

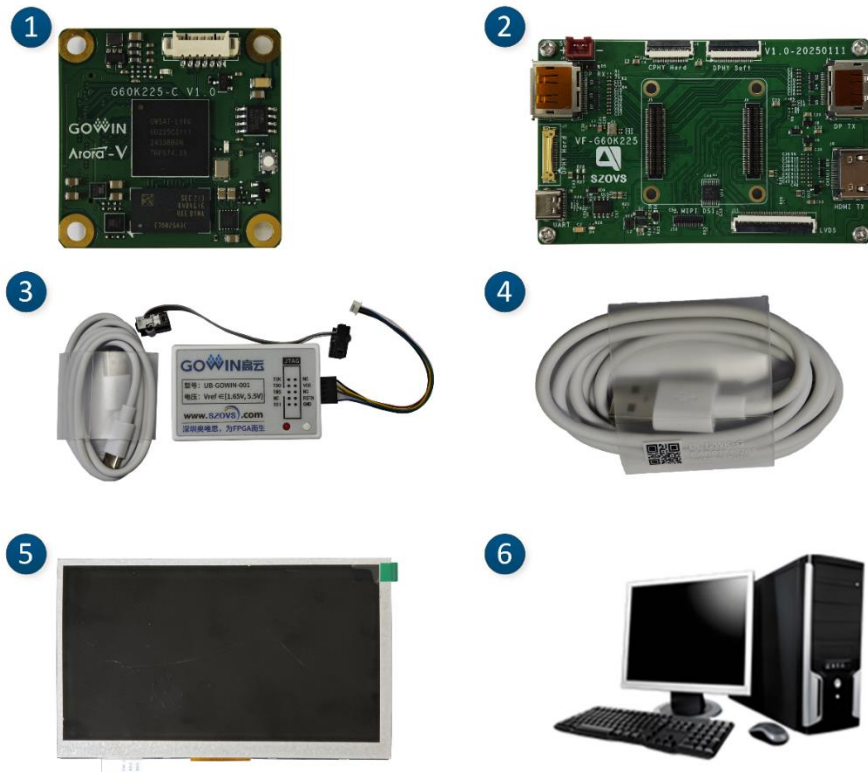
3.5.1 Demo Feature

The feature of this demo is to implement the 1024*600 LVDS screen output and display.

3.5.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. 1024*600 LVDS/RGB LCD
6. PC

Figure 3-9 Hardware Composition of 1024*600@60 LVDS LCD Screen Display Test



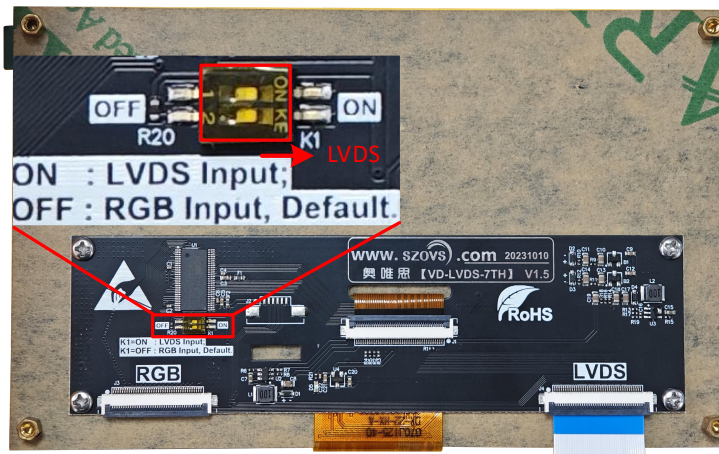
- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ 1024*600 LVDS/RGB LCD
- ⑥ PC

3.5.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the LVDS screen to the carrier board's LVDS port (J11) with an FPC cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

Note!

- The 1024x600 7-inch LCD screen supports both RGB and LVDS input formats. The DIP switch on the back needs to be set to the LVDS format, as shown in the figure below.

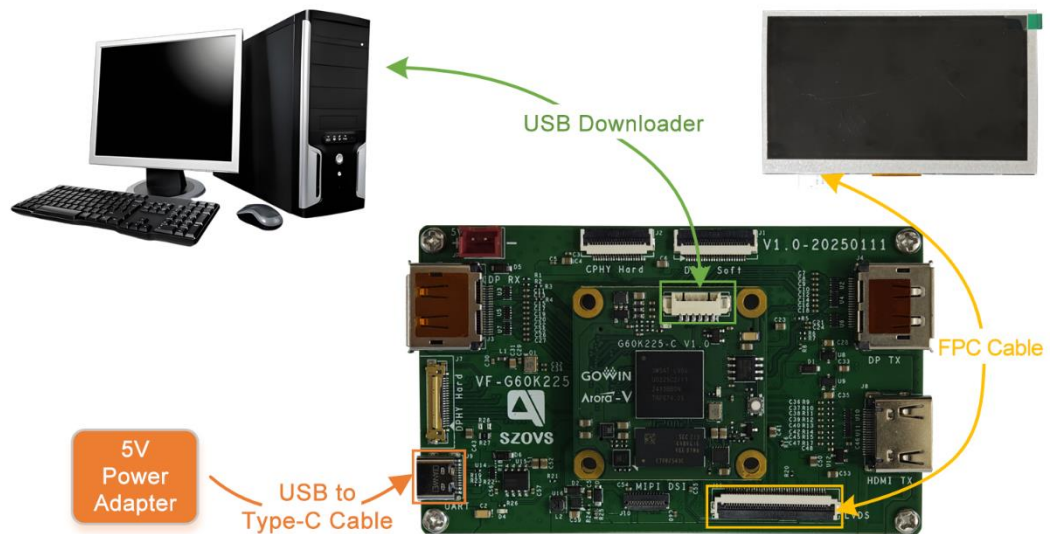


- The 1024x600 7-inch LCD screen uses a 40P forward direction FPC cable with 0.5mm pitch. When connecting the FPC cable to the connector, the metal side should face down, and the blue reinforcement sheet should face up, as shown in the figure below.



The connection diagram is as follows.

Figure 3-10 Hardware Connection Diagram of 1024*600@60 LVDS LCD Screen Display Test



3.5.4 Demo Effect

After downloading the program, the LVDS screen cycles through four images.

3.6 1080*1920@60 MIPI DSI LCD Screen Display Test

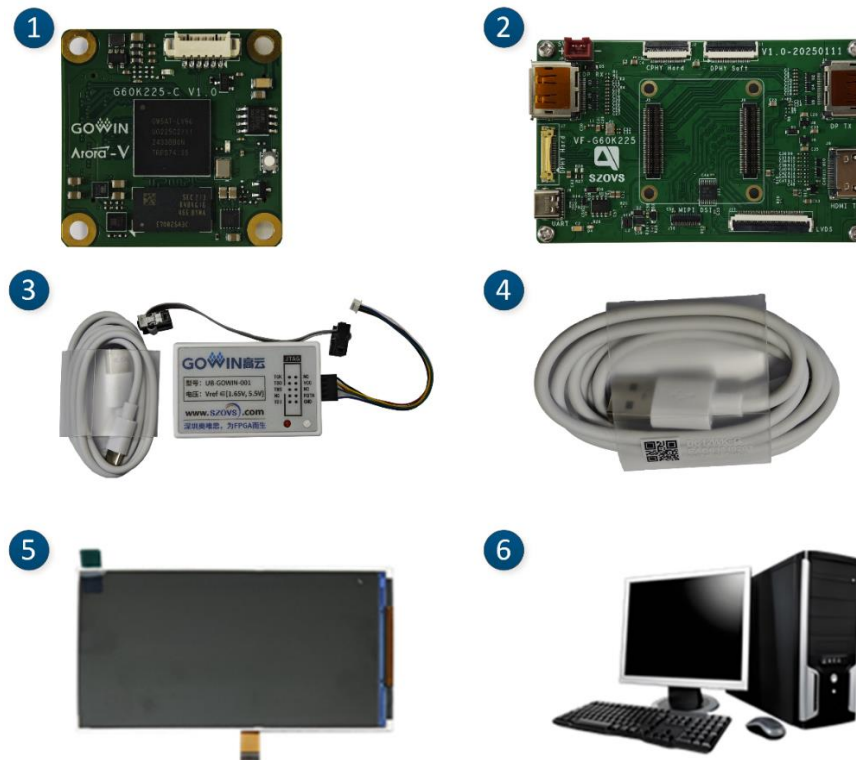
3.6.1 Demo Feature

The feature of this demo is to implement 1080P MIPI LCD output and display.

3.6.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. 1080*1920 MIPI LCD
6. PC

Figure 3-11 Hardware Composition of 1080*1920@60 DSI LCD Screen Display Test



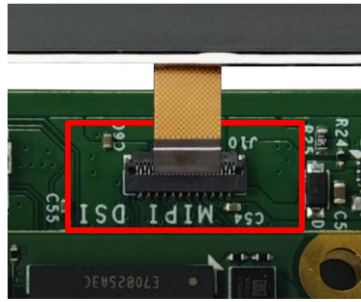
- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ 1080*1920 MIPI LCD
- ⑥ PC

3.6.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the MIPI LCD screen to the carrier board's MIPI DSI port (J10) with an FPC cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

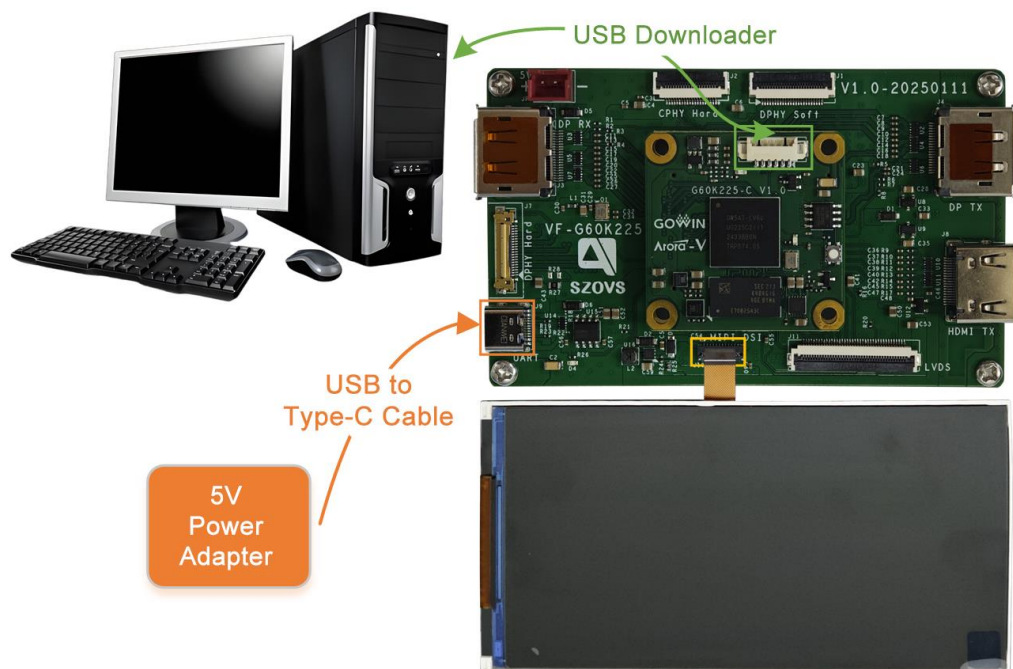
Note!

When connecting the FPC cable of the MIPI LCD screen to the carrier board connector, the metal side should face down, and the reinforcement sheet should face up, as shown in the figure below.



The connection diagram is as follows.

Figure 3-12 Hardware Connection Diagram of 1080*1920@60 DSI LCD Screen Display Test



3.6.4 Demo Effect

After downloading the program, the MIPI LCD cycles through four images.

3.7 1920*1080@60 DP Screen Display Test

3.7.1 Demo Feature

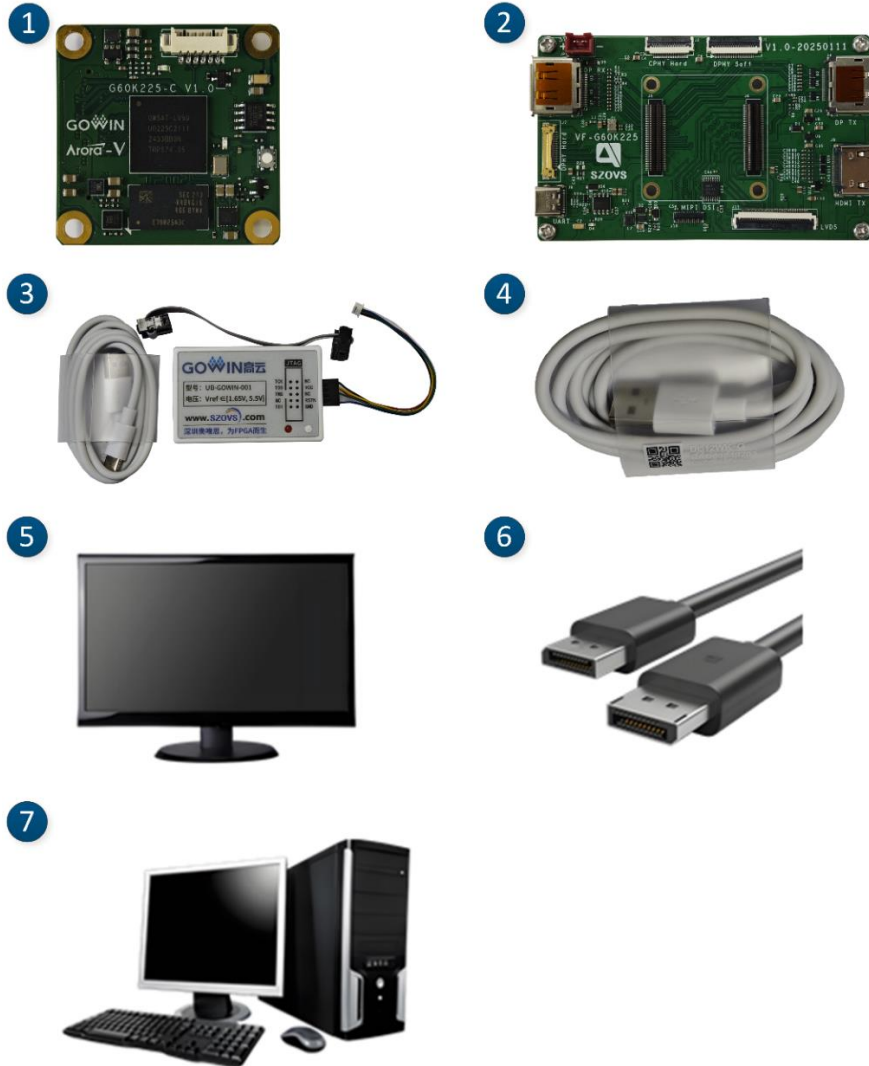
The feature of this demo is to implement the 1080P DP output display.

3.7.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board

3. USB downloader
4. USB to Type-C cable
5. Monitor with DP interface
6. DP cable
7. PC

Figure 3-13 Hardware Composition of 1920*1080@60 DP Screen Display Test



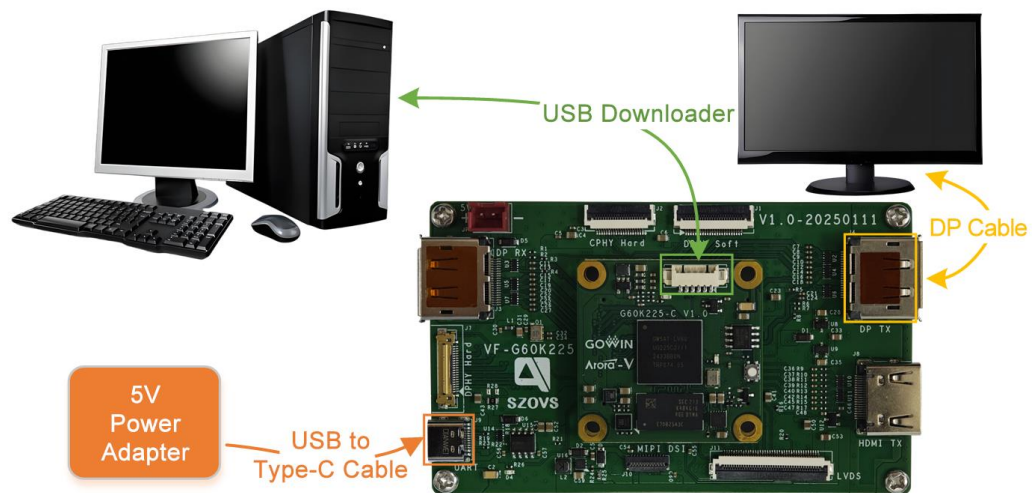
- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ Monitor with DP interface
- ⑥ DP cable
- ⑦ PC

3.7.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the DP monitor to the carrier board's DP_TX port (J4) with a DP cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 3-14 Hardware Connection Diagram of 1920*1080@60 DP Screen Display Test



3.7.4 Demo Effect

After downloading the program, the DP monitor cycles through four images.

3.8 1920*1080@ 60 DP Screen Receiving Display Test

3.8.1 Demo Feature

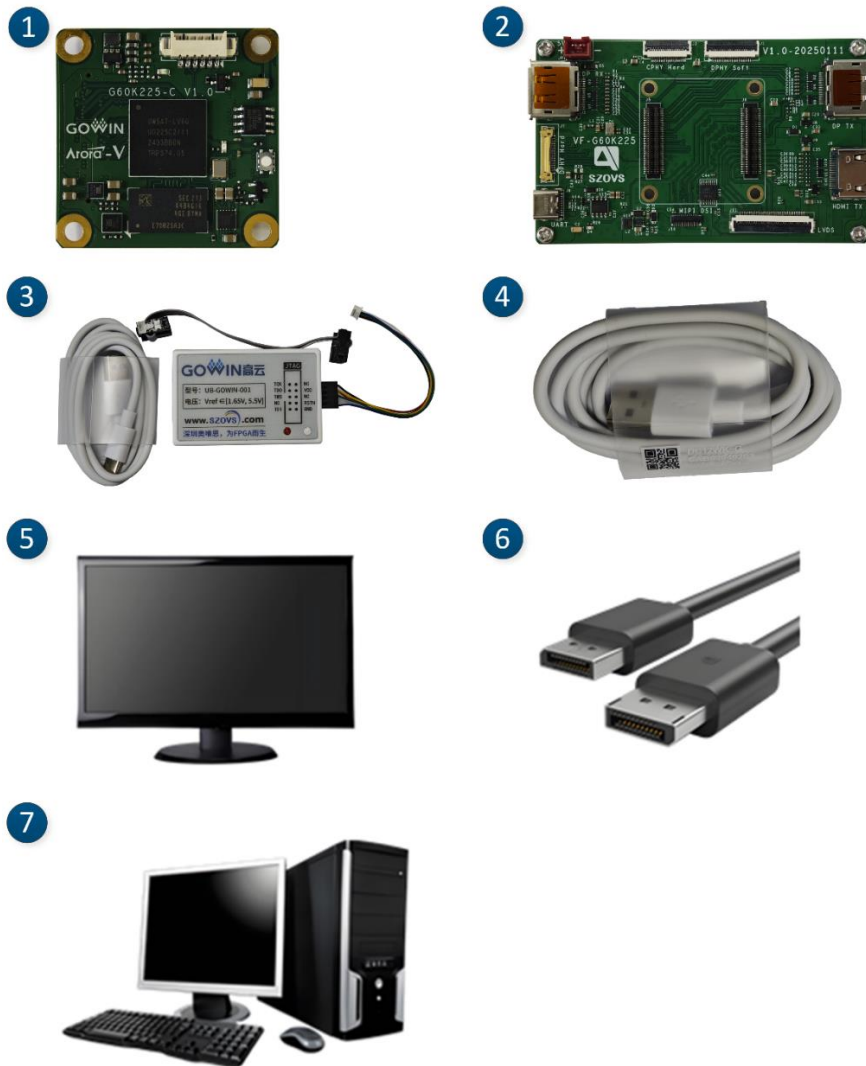
The feature of this demo is to implement 1080P DP reception and display.

3.8.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board

3. USB downloader
4. USB to Type-C cable
5. Monitor with DP interface
6. DP cable
7. PC

Figure 3-15 Hardware Composition of 1920*1080@60 DP Screen Receiving Display Test



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ Monitor with DP interface
- ⑥ DP cable
- ⑦ PC

3.8.3 Demo Hardware Connection

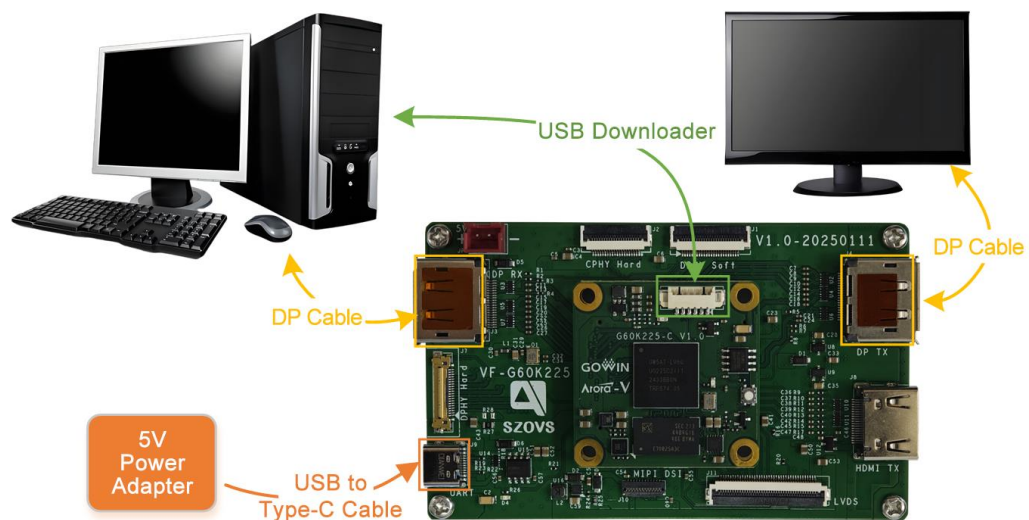
1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the carrier board's DP_TX port (J4) to the monitor and the DP_RX port (J3) to the PC with two DP cables.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

Note!

When using a PC as the input source, if the interface is repeatedly plugged and unplugged, abnormal issues such as screen flickering may occur. Press the reset button on the core board to reset and resolve the flickering issue.

The connection diagram is as follows.

Figure 3-16 Hardware Connection Diagram of 1920*1080@60 DP Screen Display Test



3.8.4 Demo Effect

After downloading the program, the monitor successfully displays the PC desktop.

3.9 1920*1080@60 DDR3 Image Cache and HDMI Screen Display Test

3.9.1 Demo Feature

Cache the real-time generated 1920x1080@60 images into DDR3, then read them with a 1920x1080@60 video timing and output to the HDMI monitor.

3.9.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. Monitor with HDMI interface
6. HDMI cable
7. PC

Figure 3-17 Hardware Composition of 1920*1080@60 DDR3 Image Cache and HDMI Screen Display Test



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ Monitor with HDMI interface
- ⑥ HDMI cable
- ⑦ PC

3.9.3 Demo Hardware Connection

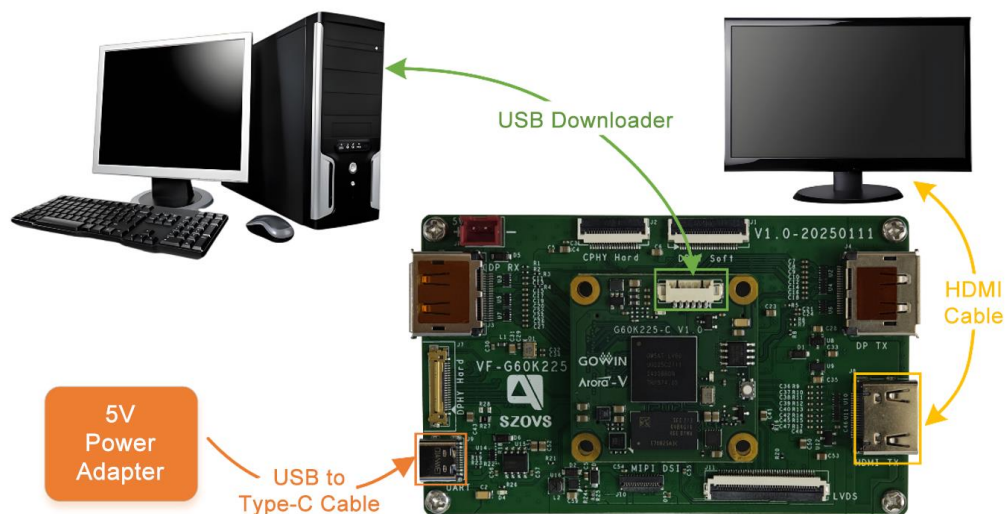
1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6

terminal (J4).

3. Then, connect the HDMI monitor to the carrier board's HDMI port (J8) with an HDMI cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 3-18 Hardware Connection Diagram of 1920*1080@60 DDR3 Image Cache and HDMI Screen Display Test



3.9.4 Demo Effect

After downloading the program, the HDMI monitor cycles through four images.

3.10 1024*600@60 DDR3 Image Cache and LVDS Screen Display Test

3.10.1 Demo Feature

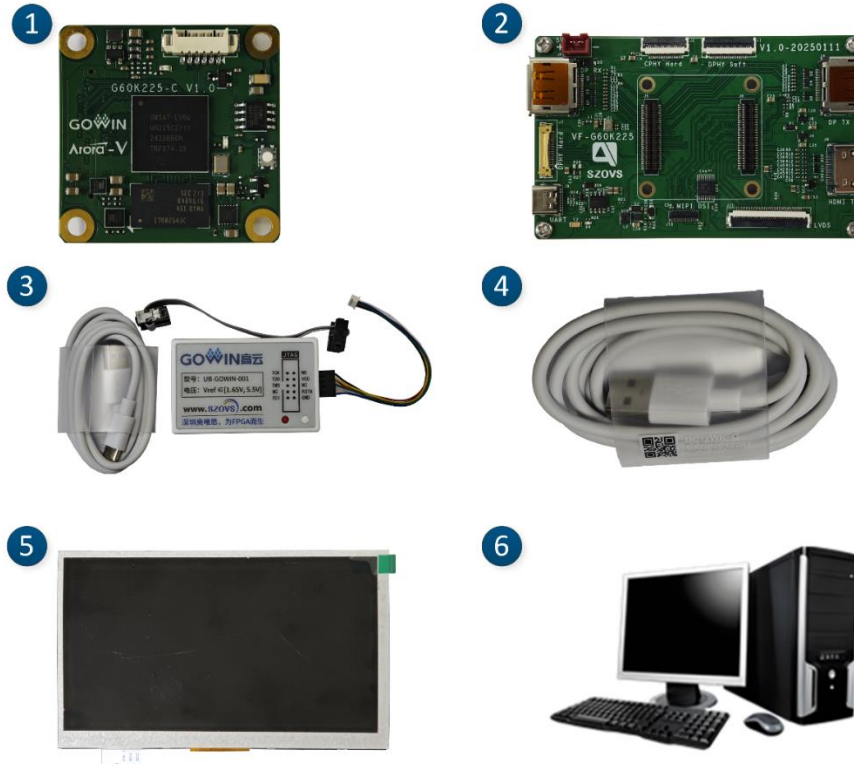
Cache the real-time generated 1024*600@60 images into DDR3, then read them with a 1024*600@60 video timing and output to the LVDS monitor.

3.10.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader

4. USB to Type-C cable
5. 1024*600 LVDS/RGB LCD
6. PC

Figure 3-19 Hardware Composition of 1024*600@60 DDR3 Image Cache and LVDS Screen Display Test

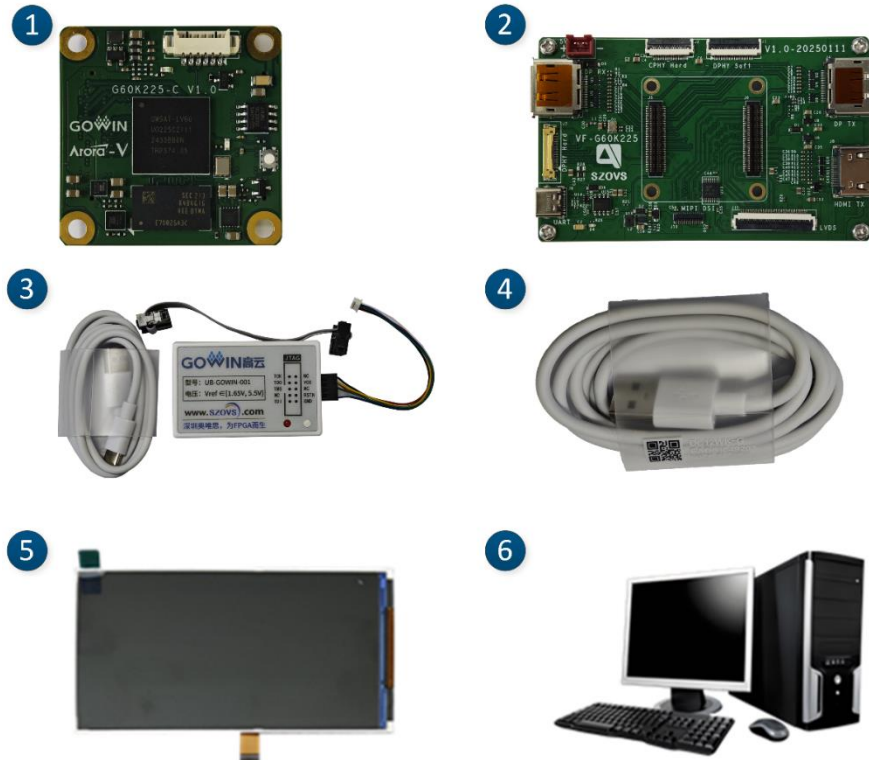


- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ 1024*600 LVDS/RGB LCD
- ⑥ PC

3.10.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the LVDS screen to the carrier board's LVDS port (J11) with an FPC cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

LCD Screen Display Test



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ 1080*1920 MIPI LCD
- ⑥ PC

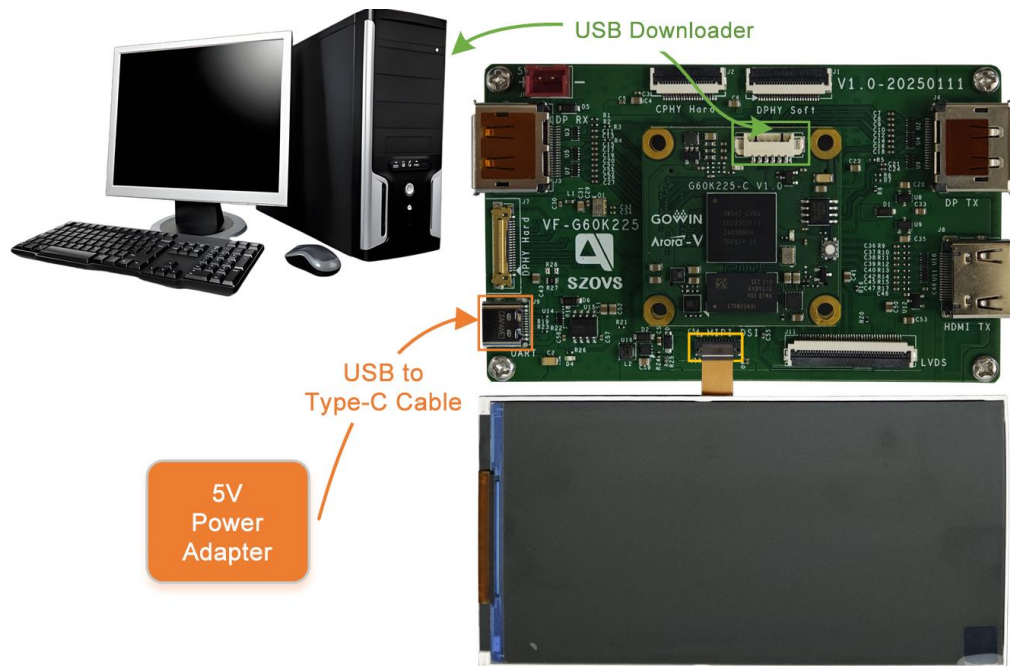
3.11.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the MIPI LCD screen to the carrier board's MIPI DSI port (J10) with an FPC cable.
4. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 3-22 Hardware Connection Diagram of 1080*1920@60 DDR3 Image Cache

and DSI LCD Screen Display Test



3.11.4 Demo Effect

After downloading the program, the MIPI LCD cycles through four images.

4 Image Demo

4.1 SC130GS Black-and-White Exposure 1-lane HDMI Screen Display Project

4.1.1 Demo Feature

Based on DPHY soft core and DDR3, the project caches the black-and-white image data captured by SC130GS into DDR3 and outputs it to HDMI screen to display with 1280*720@60 video timing.

4.1.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. SC130GS with 1.3 MP MIPI global shutter black-and-white exposure
6. Monitor with HDMI interface
7. HDMI cable
8. PC

Figure 4-1 Hardware Composition of SC130GS Black-and-White Exposure 1-lane HDMI Screen Display Project



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ SC130GS camera with 1.3 MP MIPI global shutter black-and-white exposure
- ⑥ Monitor with HDMI interface
- ⑦ HDMI cable
- ⑧ PC

4.1.3 Demo Hardware Connection

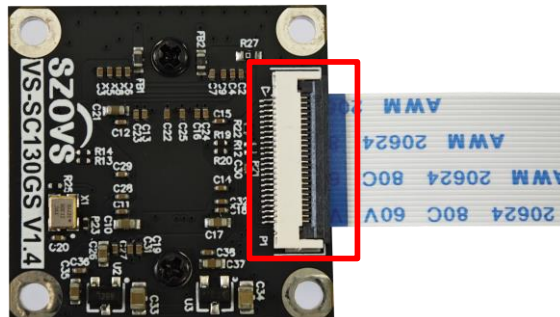
1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6

terminal (J4).

3. Then, connect the SC130GS camera to the carrier board's MIPI DPHY soft core interface (J1).
4. After that, connect the HDMI monitor to the carrier board's HDMI port (J8) with an HDMI cable.
5. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

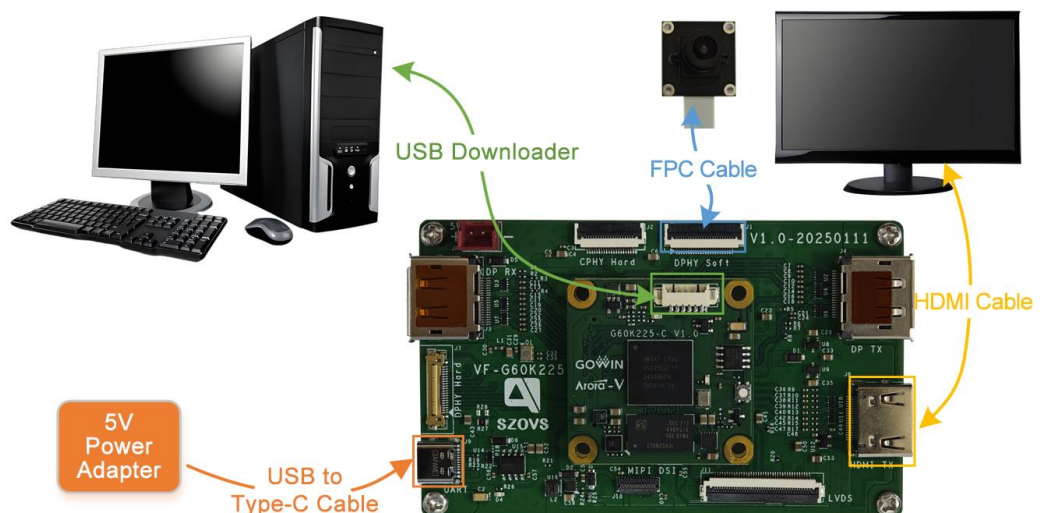
Note!

The SC130GS camera with black-and-white exposure uses a 24pin reverse direction FPC cable with 0.5mm pitch. When connecting the FPC cable to the connector, the metal side should face down, and the blue reinforcement sheet should face up, as shown in the figure below.



The connection diagram is as follows.

Figure 4-2 Hardware Connection Diagram of SC130GS Black-and-White Exposure 1-lane HDMI Screen Display Project



4.1.4 Demo Effect

After downloading the program, the HDMI monitor shows the image

captured by the SC130GS camera with black-and-white exposure.

4.2 SC130GS Black-and-White Exposure 1-lane LVDS Screen Display Project

4.2.1 Demo Feature

Based on DPHY soft core and DDR3, the project caches the black-and-white image data captured by SC130GS into DDR3 and outputs it to LVDS screen to display with 1024*600@60 video timing.

4.2.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. SC130GS with 1.3 MP MIPI global shutter black-and-white exposure
6. 1024*600 LVDS/RGB LCD
7. PC

Figure 4-3 Hardware Composition of SC130GS Black-and-White Exposure 1-lane LVDS Screen Display Project



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ SC130GS with 1.3 MP MIPI global shutter black-and-white exposure
- ⑥ 1024*600 LVDS/RGB LCD
- ⑦ PC

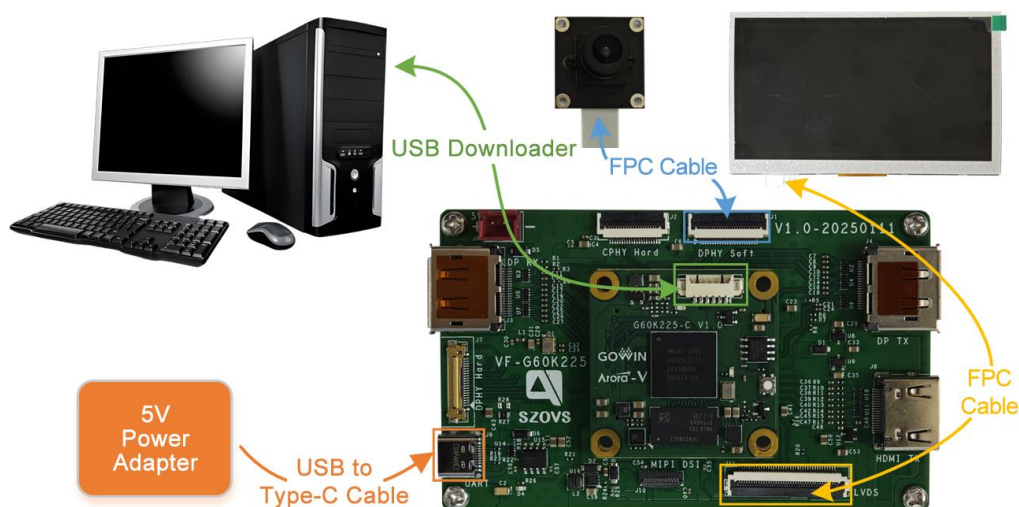
4.2.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).

3. Then, connect the SC130GS camera to the MIPI DPHY soft core interface (J1) on the carrier board.
4. After that, connect the LVDS screen to the carrier board's LVDS port (J11) with an FPC cable.
5. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 4-4 Hardware Connection Diagram of SC130GS Black-and-White Exposure 1-lane LVDS Screen Display Project



4.2.4 Demo Effect

After downloading the program, LVDS screen shows the image captured by the SC130GS camera with black-and-white exposure.

4.3 SC2210 Color Exposure 1-lane HDMI Screen Display Project

4.3.1 Demo Feature

Based on DPHY soft core and DDR3, the project caches the color image data captured by SC2210 into DDR3 and outputs it to HDMI screen to display with 1920*1080@60 video timing.

4.3.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. SC2210 module with 2 MP MIPI rolling shutter color exposure
6. Monitor with HDMI interface
7. HDMI cable
8. PC

Figure 4-5 Hardware Composition of SC2210 Color Exposure 1-lane HDMI Screen Display Project



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ SC2210 module with 2 MP MIPI rolling shutter color exposure
- ⑥ Monitor with HDMI interface
- ⑦ HDMI cable
- ⑧ PC

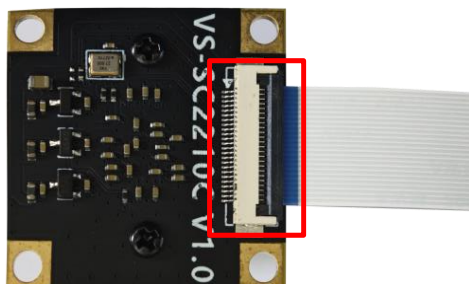
4.3.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.

2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the SC2210 camera to the MIPI DPHY soft core interface (J1) on the backplane.
4. After that, connect the HDMI monitor to the carrier board's HDMI port (J8) with an HDMI cable.
5. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

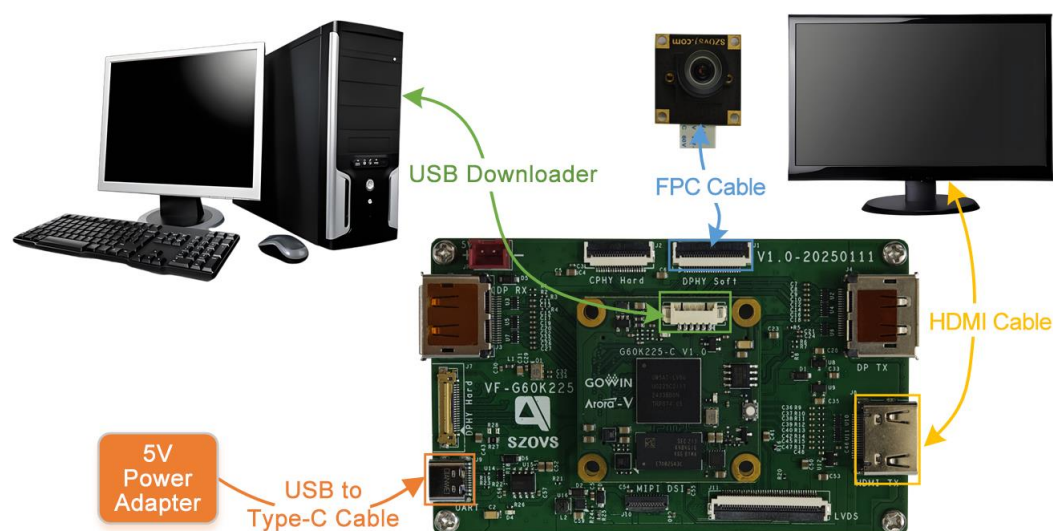
Note!

The SC2210 camera with color exposure uses a 24pin reverse direction FPC cable with 0.5mm pitch. When connecting the FPC cable to the connector, the metal side should face down, and the blue reinforcement sheet should face up, as shown in the figure below.



The connection diagram is as follows.

Figure 4-6 Hardware Connection Diagram of SC2210 Color Exposure 1-lane HDMI Screen Display Project



4.3.4 Demo Effect

After downloading the program, the HDMI monitor shows the image captured by the SC2210 camera with color exposure.

4.4 SC2210 Color Exposure 1-lane LVDS Screen Display Project

4.4.1 Demo Feature

Based on DPHY soft core and DDR3, the project caches the color image data captured by SC2210 into DDR3 and outputs it to LVDS screen to display with 1024*600@60 video timing.

4.4.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. SC2210 module with 2 MP MIPI rolling shutter color exposure
6. 1024*600 LVDS/RGB LCD
7. PC

Figure 4-7 Hardware Composition of SC2210 Color Exposure 1-lane LVDS Screen Display Project

- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ SC2210 module with 2 MP MIPI rolling shutter color exposure
- ⑥ 1024*600 LVDS/RGB LCD
- ⑦ PC

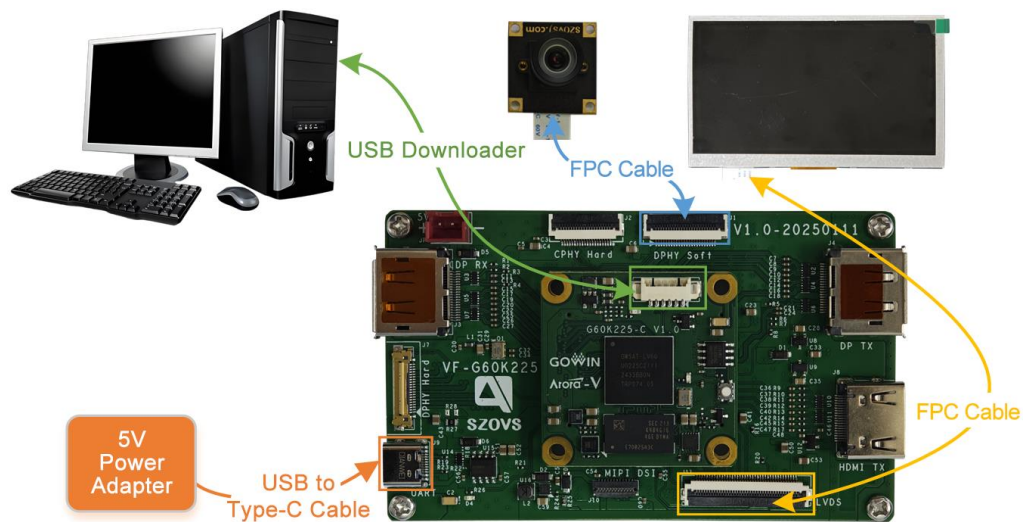
4.4.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).

3. Then, connect the SC2210 camera to the MIPI DPHY soft core interface (J1) on the carrier board.
4. After that, connect the LVDS screen to the carrier board's LVDS port (J11) with an FPC cable.
5. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 4-8 Hardware Connection Diagram of SC2210 Color Exposure 1-lane LVDS Screen Display Project



4.4.4 Demo Effect

After downloading the program, the LVDS monitor shows the image captured by the SC2210 camera with color exposure.

4.5 IMX586 1920x1080@60 HDMI Screen Display Project

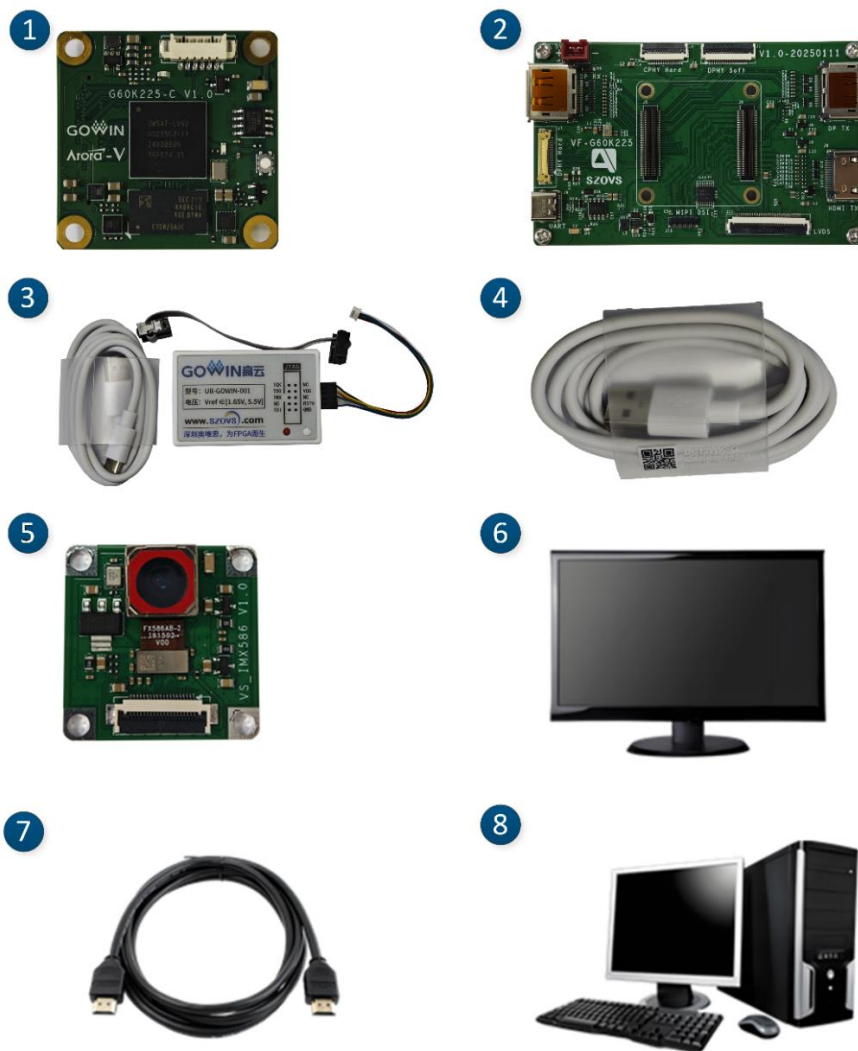
4.5.1 Demo Feature

Based on CPHY hard core and DDR3, the project caches the color image data captured by IMX586 into DDR3 and outputs it to HDMI screen to display with 1920*1080@60 video timing.

4.5.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. IMX586 module with 48 MP CPHY rolling shutter color exposure
6. Monitor with HDMI interface
7. HDMI cable
8. PC

Figure 4-9 Hardware Composition of IMX586 1920x1080@60 HDMI Screen Display Project



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ IMX586 module with 48 MP CPHY rolling shutter color exposure
- ⑥ Monitor with HDMI interface
- ⑦ HDMI cable
- ⑧ PC

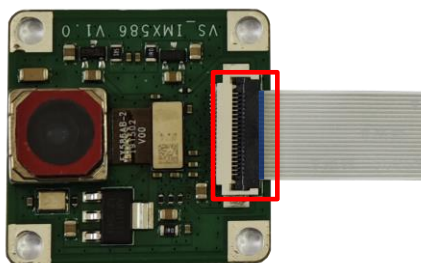
4.5.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.

2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).
3. Then, connect the IMX586 camera to the MIPI CPHY hard core interface (J2) on the carrier board.
4. After that, connect the HDMI monitor to the carrier board's HDMI port (J8) with an HDMI cable.
5. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

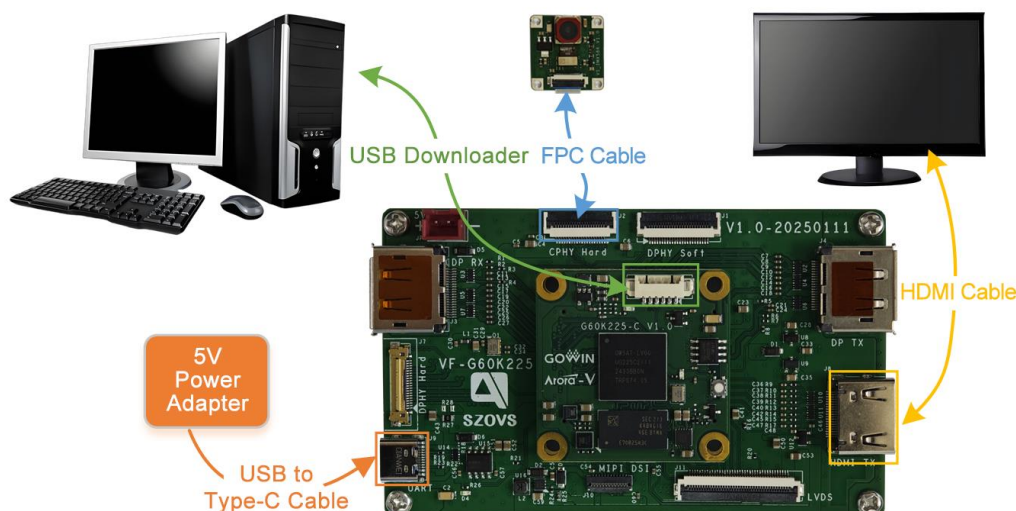
Note!

The IMX586 camera uses a 20pin same direction FPC cable with 0.5mm pitch. When connecting the FPC cable to the connector, the metal side should face down, and the blue reinforcement sheet should face up, as shown in the figure below.



The connection diagram is as follows.

Figure 4-10 Hardware Connection Diagram of IMX586 1920x1080@60 HDMI Screen Display Project



4.5.4 Demo Effect

After downloading the program, the HDMI monitor shows the image captured by the IMX586 camera with color exposure.

4.6 IMX586 1024x600@60 LVDS Screen Display Project

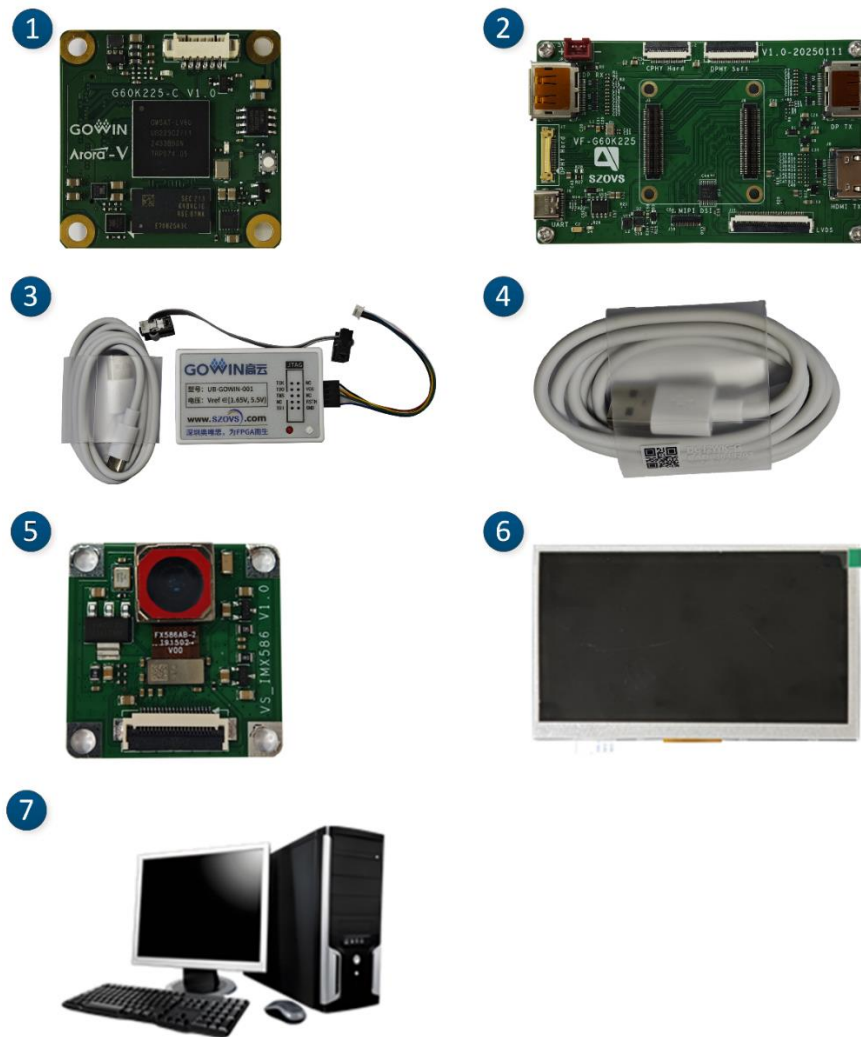
4.6.1 Demo Feature

Based on CPHY hard core and DDR3, the project caches the color image data captured by IMX586 into DDR3 and outputs it to LVDS screen to display with 1024*600@60 video timing.

4.6.2 Demo Hardware Composition

1. DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
2. DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
3. USB downloader
4. USB to Type-C cable
5. IMX586 module with 48 MP CPHY rolling shutter color exposure
6. 1024*600 LVDS/RGB LCD
7. PC

Figure 4-11 Hardware Composition of IMX586 1024x600@60 LVDS Screen Display Project



- ① DK_VIDEO_GW5AT-LV60UG225_V1.0 core board
- ② DK_VIDEO_GW5AT-LV60UG225_V1.0 carrier board
- ③ USB downloader
- ④ USB to Type-C cable
- ⑤ IMX586 module with 48 MP CPHY rolling shutter color exposure
- ⑥ 1024*600 LVDS/RGB LCD
- ⑦ PC

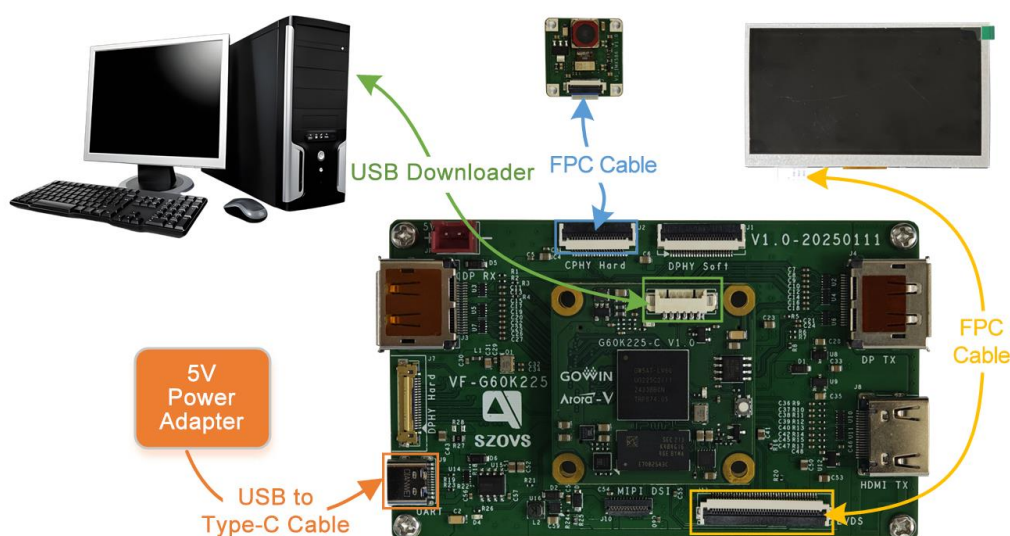
4.6.3 Demo Hardware Connection

1. Firstly, connect the core board to the carrier board.
2. Next, connect the USB downloader to the core board's ZH1.25-6 terminal (J4).

3. Then, connect the IMX586 camera to the MIPI CPHY hard core interface (J2) on the carrier board.
4. After that, connect the LVDS screen to the carrier board's LVDS port (J11) with an FPC cable.
5. Finally, insert the USB to Type-C cable connected to the 5V power adapter into the carrier board's USB to Type-C port (J9) to power the development board.

The connection diagram is as follows.

Figure 4-12 Hardware Connection Diagram of IMX586 1024x600@60 LVDS Screen Display Project



4.6.4 Demo Effect

After downloading the program, the LVDS monitor shows the image captured by the IMX586 camera with color exposure.

