



HAT REFERENCE GUIDE

VIA AI Transforma Model 1

GFX HAT



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Revision History

Version	Date	Remarks
1.00	22/11/2024	Initial release

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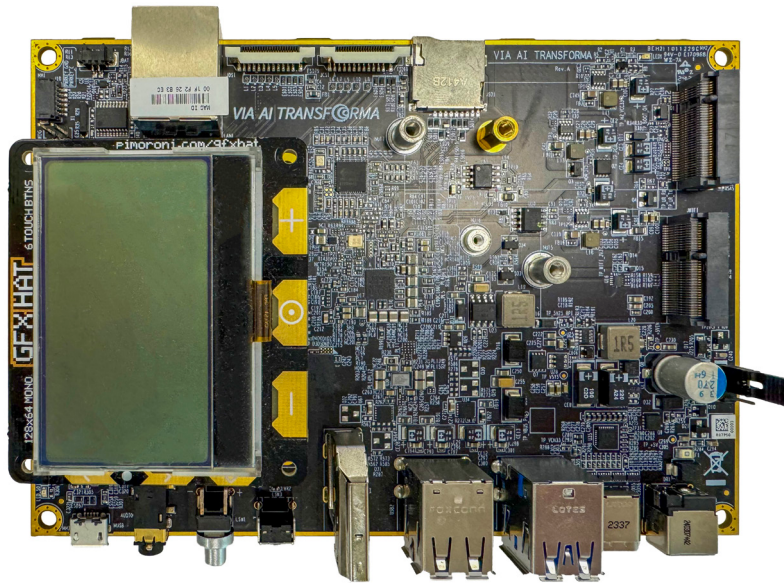
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1. Introduction

The GFX HAT is a 128x64-pixel, 2.15" LCD display. This guide explains how to install the necessary libraries, setup proper configurations and settings to have the GFX HAT work on the VIA AI Transforma board.

1.1 Install and Setup the HAT

Mount the GFX HAT to the 40-pin headers on the VIA AI Transforma board, make sure that the AI Transforma is powered off and the pins are properly aligned when stacking the GFX HAT.



1.2 Download and Install Examples

Before running GFX HAT examples on the VIA AI Transforma board, users must download and install the necessary libraries and reference code.

1.2.1 Install Libraries

Install the required packages on VIA AI Transforma board with the following commands:

```
# Download necessary libraries
debian@transforma:~$ sudo apt update
debian@transforma:~$ sudo apt install git python3-spidev python3-transforma-gpio
```

1.2.2 Download Source Code

Download code from <https://github.com/pimoroni/gfx-hat/> with the following commands:

```
# Download GFX sample codes
debian@transforma:~$ cd /usr/local/lib/python3.11/dist-packages

# Under "debian@transforma:/usr/local/lib/python3.11/dist-packages"
$ sudo git clone https://github.com/pimoroni/gfx-hat
$ cd gfx-hat/library
$ sudo python3 setup.py install
```

Since the GFX HAT was designed for Raspberry Pi, some modifications are required to run the example codes on VIA AI Transforma Model 1 board:

Modify “/usr/local/lib/python3.11/dist-packages/Cap1xxx-0.1.4-py3.11.egg/cap1xxx.py” as below:

```
Line 255:
__init__(self, i2c_addr=DEFAULT_ADDR, i2c_bus=1, alert_pin=-1, reset_pin=-1, on_touch=None,
skip_init=False):
--->
__init__(self, i2c_addr=DEFAULT_ADDR, i2c_bus=2, alert_pin=-1, reset_pin=-1, on_touch=None,
skip_init=False):
```

Modify “/usr/local/lib/python3.11/dist-packages/sn3218-3.0.0-py3.11.egg/sn3218/__init__.py” as below:

```
Line 15:
__init__(self, i2c_bus=1, i2c_dev=None, enable_mask=0b1111111111111111):
--->
__init__(self, i2c_bus=2, i2c_dev=None, enable_mask=0b1111111111111111):
```

2. Examples

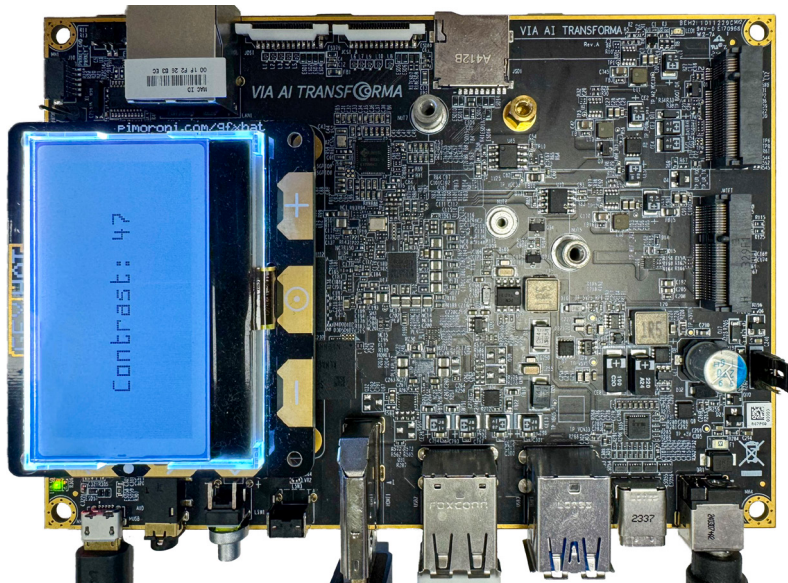
There are 4 examples under the “/usr/local/lib/python3.11/dist-packages/gfx-hat/example” folder.

2.1 Example 1: Changing LCD Contrast

This example shows how to set the LCD contrast. Execute the following command to check the display output with different contrast values.

```
debian@transforma: /usr/local/lib/python3.11/dist-packages/gfx-hat/example$ sudo python3  
contrast-scanner.py  
  
Press Ctrl+C to exit!
```

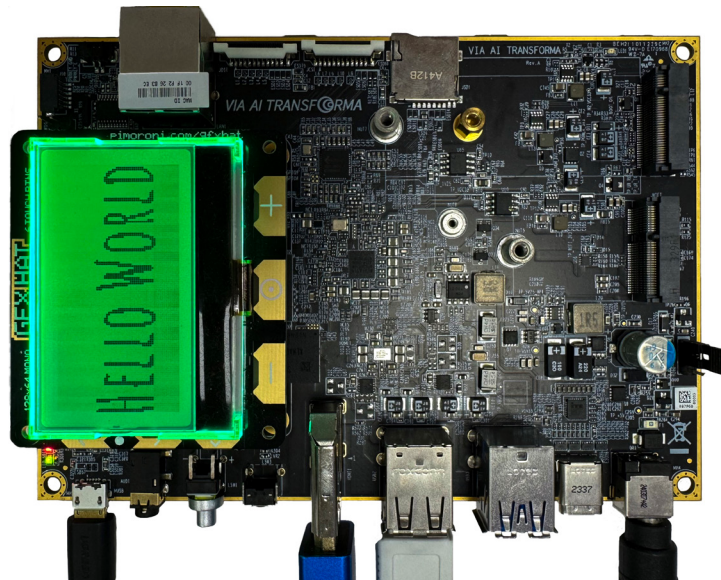
The contrast value will be shown on the LCD and will gradually increase from 25 to 64 before repeating with the inverse contrast.



2.2 Example 2: Hello World!

This example shows how to print text “HELLO WORLD” on the display. Execute the following command to show the text:

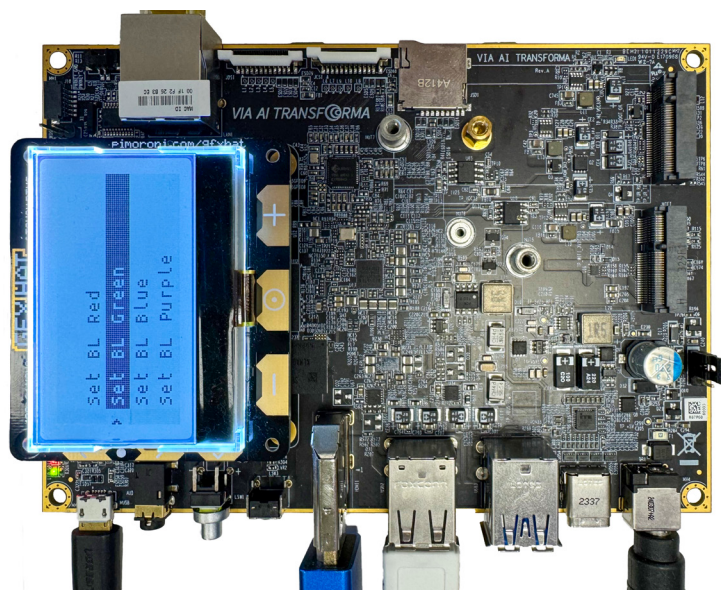
```
debian@transforma: /usr/local/lib/python3.11/dist-packages/gfx-hat/example$ sudo python3  
hello-world.py  
  
Press Ctrl+C to exit!
```



2.3 Example 3: Menu Options

This example shows a simple implementation of a menu UI and using the capacitive touch buttons to navigate menu items. Execute the following command to try the demo:

```
debian@transforma: /usr/local/lib/python3.11/dist-packages/gfx-hat/example$ sudo python3  
menu-options.py  
  
Press Ctrl+C to exit!
```



The demo menu provides different LCD backlight color options to select:

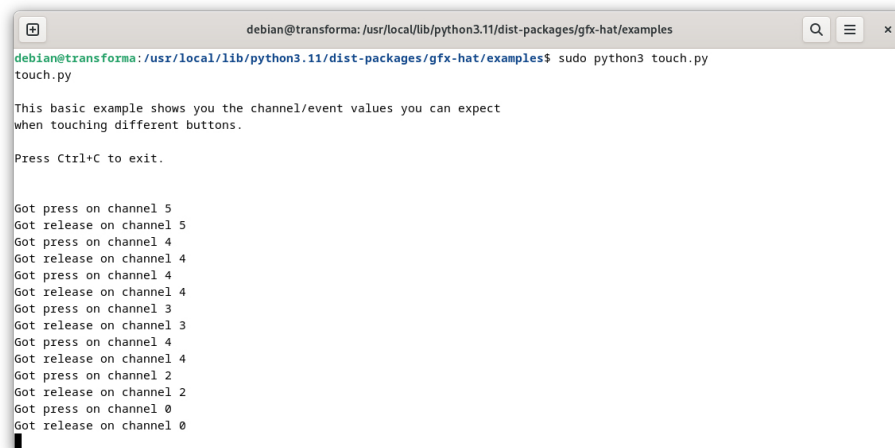
- Set backlight color to Red, Green, Blue, Purple, White
- Exit the demo

2.4 Example 4: Capacitive Touch Buttons

This example shows how to check the capacitive touch buttons status. Execute the following command to check the touch button status:

```
debian@transforma: /usr/local/lib/python3.11/dist-packages/gfx-hat/example$ sudo python3 touch.py  
Press Ctrl+C to exit!
```

When a touch button is being pressed or released, the touch button status will be shown in the command line console:



```
debian@transforma: /usr/local/lib/python3.11/dist-packages/gfx-hat/examples$ sudo python3 touch.py  
touch.py  
  
This basic example shows you the channel/event values you can expect  
when touching different buttons.  
  
Press Ctrl+C to exit.  
  
Got press on channel 5  
Got release on channel 5  
Got press on channel 4  
Got release on channel 4  
Got press on channel 4  
Got release on channel 4  
Got press on channel 3  
Got release on channel 3  
Got press on channel 4  
Got release on channel 4  
Got press on channel 2  
Got release on channel 2  
Got press on channel 0  
Got release on channel 0
```

3. References

Further details for the GFX HAT can be acquired from:

<https://shop.pimoroni.com/products/gfx-hat?variant=12828343631955>

https://pinout.xyz/pinout/gfx_hat



Taiwan Headquarters

1F, 531 Zhong-zheng Road,
Xindian Dist., New Taipei City 231
Taiwan

Tel: 886-2-2218-5452
Fax: 886-2-2218-9860
Email: embedded@via.com.tw



USA

940 Mission Court
Fremont, CA 94539,
USA

Tel: 1-510-687-4688
Fax: 1-510-687-4654
Email: embedded@viatech.com



Japan

3-15-7 Ebisu MT Bldg. 6F,
Higashi, Shibuya-ku
Tokyo 150-0011
Japan

Tel: 81-3-5466-1637
Fax: 81-3-5466-1638
Email: embedded@viatech.co.jp



China

Tsinghua Science Park Bldg. 7
No. 1 Zongguancun East Road,
Haidian Dist., Beijing, 100084
China

Tel: 86-10-59852288
Fax: 86-10-59852299
Email: embedded@viatech.com.cn



Europe

Email: embedded@via-tech.eu